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Environmental Program

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(By E-mail and Overnight Delivery to be received on December 21)

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Re: Comments of the Fond du Lac Band of Lake Superior Chippewa on the NorthMet Mining and Land Exchange Final Environmental Impact Statement (FEIS) and in response to the Army Corps of Engineers' Notice for the PolyMet Mining Inc, Section 404 Permit Application MVP-1990-05528-JKA

Dear Ms. Fay, Mr. Bruner, and Mr. Jimenez:

The Fond du Lac Band of Lake Superior Chippewa (the "Band") has reviewed the NorthMet Mining Project and Land Exchange November 2015 Final Environmental Impact Statement ("FEIS"), notice of which was published in the Federal Register on November 13, 2015, and the Clean Water Act (CWA) §404 wetlands permit notification. We submit these comments on both,[1] to address the remaining unresolved questions and NEPA adequacy issues, and to reiterate our profound concerns for likely and predictable impacts to tribally important and treaty protected resources upstream of our reservation inthe St. Louis River watershed and within the 1854 Ceded Territory that could result from the NorthMet Mining Project and Land Exchange.

[1] The Band submits these comments in accord with the Corps' emails of December 11 and 14, 2015 extending to December 21, 2015, the deadline by which the cooperating agencies, including the Fond du Lac Band, could timely submit comments on both the CWA section 404 permit application and the FEIS. In these comments the Band also addresses the FEIS as it relates to the proposed land exchange. The Band, however, intends to submit to the Regional Forester, the Band's objections to the draft Record of Decision on the proposed NorthMet Project Land Exchange pursuant to 36 CFR Part 218 by the January 4, 2016 deadline for such objections.

As discussed in detail below, although the environmental review has extended over a long period of time, the FEIS does not adequately or accurately address the likely environmental impacts of this Project. The FEIS continues to contain significant deficiencies in the information and analyses provided, and therefore does not comply with NEPA. The proposed Project further does not satisfy the standards required for a §404 wetlands permit and, as a result the no action alternative presented by the FEIS, and denial of the application for a §404 permit, is the only appropriate action.

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Introduction

1. The Band's federally protected rights would be directly affected by the proposed Project.

The Fond du Lac Band of Lake Superior Chippewa is a federally recognized Indian tribe and one of the six member bands of the Minnesota Chippewa Tribe ("MCT"). The Band is a cooperating agency on the environmental review of this Project, along with other MCT-member Bands, the Grand Portage Band of Lake Superior Chippewa and the Bois Forte Band of Chippewa. All the Bands involved retain hunting, fishing, and other usufructuary rights that extend throughout the entire northeastern portion of the state of Minnesota under the 1854 Treaty of LaPointe[2] (the "Ceded Territory"). Throughout the Ceded Territory, all three Bands have a legal interest in protecting natural resources, and all federal agencies share in the federal government's trust responsibility to the Bands to maintain and protect those treaty resources.[3]

The applicant for the proposed Project, PolyMet Mine Inc., seeks to develop a copper sulfide ore open pit mine and processing plant in northeastern Minnesota. It would be the first non-ferrous mine in Minnesota and would include three new open pits, permanent and temporary waste rock stockpiles, and processing facilities to extract copper, nickel, and platinum ore. The processing facilities would be at the former LTV Steel Mining Company Site and would use the existing LTV tailings basin. The waste rock at the site is acid generating. The mine would operate for 20 years, after which active closure and post-closure maintenance would need to continue for more than 200 years, essentially indefinitely. The mine site is within the Superior National Forest, within the 1854 Treaty Territory where the Band holds off-Reservation rights to hunt, fish and gather, and upstream of the Fond du Lac Reservation within the St. Louis River watershed.

The proposed mine would be the first-of-its kind in Minnesota. It would affect land, water and air over a broad geographical scope – extending to both the St. Louis River/Lake Superior watershed during the mine's operations, and into the Rainy River Basin and the Boundary Waters Canoe Area Wilderness post-closure. Its impacts would be felt not only during its operations but generations to come – more than 200 years. Because the Project is the first sulfide mine proposed for development in Minnesota, the proposed Project and the issues regarding its environment impacts would establish significant precedent.

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[2] Treaty with the Chippewa, 1854, 10 Stat. 1109, in Charles J. Kappler, ed., *Indian Affairs: Laws and Treaties*, Vol. II (Washington: Government Printing Office, 1904), *available at* http://digital.library.okstate.edu/kappler/Vol2/treaties/chi0648.htm (last visited Feb. 1, 2010).

[3] *See, e.g.*, Exec. Order 13175—Consultation and Coordination With Indian Tribal Governments (Nov. 6, 2000) (stating "the United States has recognized Indian tribes as domestic dependent nations under its protection . . . .," there is a "trust relationship with Indian tribes," and "[a]gencies shall respect Indian tribal self-government and sovereignty, honor tribal treaty and other rights, and strive to meet the responsibilities that arise from the unique legal relationship between the Federal Government and Indian tribal governments."), *available at* http://ceq.hss.doe.gov/nepa/regs/eos/eo13175.html (last visited Feb. 1, 2010).

The responsibilities of the federal government under the trust responsibility and environmental justice doctrine are at their zenith here, as the proposed mine is located within the area where the Band holds its 1854 Treaty protected off-Reservation rights to hunt, fish, and gather – the exercise of which would be adversely affected by the proposed mine and the related proposed land exchange. In addition, the proposed action would also impact on-Reservation waters, which are also held by the Band under the 1854 Treaty. For this reason too, the Band's authorities under the Clean Water Act, §§303(c) and 401, must also be fully and carefully considered in the review of this proposed action.

2. The Band has significant expertise in numerous areas relevant to this matter and provided that expertise in its role as a cooperating agency on the environmental review.

Fond du Lac sought and was given cooperating agency status for this proposed Project because of the potential impacts that the Project would have on treaty-protected cultural and natural resources within the Ceded Territory, as well as impacts within the St. Louis River watershed where our reservation lands are located downstream of the Mesabi Iron Range and the proposed Project area.

As a cooperating agency, the Band provided significant expertise with respect to the environmental issues that are raised by the proposed mine.

Nancy Schuldt, Water Projects Coordinator in the Fond du Lac Band's Environmental Program, has over 18 years of experience as an aquatic ecologist and water policy professional for the Band. Nancy Schuldt has served as the Fond du Lac Water Projects Coordinator since 1997. She has a BS in Biology from the University of Dayton, and a MA in Aquatic Ecology from the University of Kansas. She developed the Band's water quality standards and monitoring program, has directed research into fish contaminants and sediment chemistry to characterize mercury impacts to Fond du Lac Band members, collaborated on research into wild rice ecology and toxicity, as well as watershed hydrologic modeling to inform management and restoration efforts. She participates in numerous local, regional, national and binational working groups to ensure the tribal perspective is represented, and initiated a cooperative wastewater management Project with the non-tribal community to protect Big Lake, a heavily developed lake on the Reservation. She initiated the tribe's nonpoint source management program, and leads the Band's environmental review of mining and energy industry impacts to trust resources. A copy of her resume is attached as Exhibit 1.

As a cooperating agency, the Fond du Lac Band has worked closely with experts at the Great Lakes Indian Fish and Wildlife Commission (GLIFWC) including, with regard to the hydrology of the site, Dr. John Colman. Dr. Coleman has more than 22 years of experience in spatial modeling of natural resources and water monitoring and analysis of hydrologic systems. He has, for the past 18 years, done extensive work on the development and application of groundwater models for characterization of groundwater hydrology at multiple mine sites, as well as modeling data on surface and sub-surface natural resources. He has served as an instructor in cooperation with U.S. Geological Service staff for groundwater modeling training focused on mine sites. He has participated as a member of a cooperating agency on two federal EISs, providing advice on water quality, water quantity modeling, and fugitive materials control, and developed and implemented baseline water quality sampling programs at mine sites. He has also developed and implemented sampling of biota at multiple mine sites to establish

baseline concentrations of metals in biota. Dr. Coleman has a B.S. in Wildlife Management from the University of Maine, an M.S. in Fisheries and Wildlife Science from the Virginia Polytechnic Institute and State University, and a Ph.D. in Wildlife Ecology with a minor in Statistics from the University of Wisconsin, Madison. His M.S. and Ph.D. research focused on modeling the distribution and use of natural resources. A copy of his resume is attached as Exhibit 2.

In addition, the following Band employees have provided expertise on various aspects of the environmental review of the proposed Project:

Richard D. Gitar, who serves as a Water Regulatory Specialist and Inspector in the Band's Office of Water Protection. Mr. Gitar has a B.S. in Biology/ Journalism, from the University of Wisconsin-Superior and a M.S. in Environmental Biology from the University of Minnesota-Duluth. He has more than 20 years of experience regarding water resources, including water quality and wetlands. He also has more than 20 years experience in researching and teaching biology, including experience as a lecturer at the University of Wisconsin-Superior. Along with his work for the Band, he serves on several boards and committees, including the Association of State Wetland Managers, the St. Louis River Alliance, he Minnesota Interagency Wetland Group, and the Minnesota Routine Assessment Development Work Group. Mr. Gitar also serves on the Corps of Engineers' Midwest Regional Supplement Peer Review Team, and EPA's NACEPT Assumable Waters Subcommittee. A copy of his resume is attached as Exhibit 3.

Joy Wiecks, who serves as the Air Quality Technician for the Fond du Lac Environmental Program. She has a B.S. in Chemical Engineering and a M.A. in Land Resources (Air Resource Management), both from the University of Wisconsin-Madison. She has more than 15 years of experience working for the Band to improve and protect the air quality of the Fond du Lac Reservation and ceded territory where the Band retains Treaty hunting, fishing and gathering rights. She implements the Band's Air Quality standards adopted in accord with the Band's treatment as a state under the Clean Air Act. She has served on the EPA's Clean Air Act Advisory Committee since 2010. A copy of her resume is attached as Exhibit 4.

Brian D. Borkholder, who serves as the Inland Fisheries Section Leader for the Fond du Lac Band's Resource Management Division. Mr. Borkholder has more than 22 years of experience developing and managing fisheries resources for the Fond du Lac Band – both within the Reservation and outside the Reservation in connection with the Band's 1854 treaty rights. His work regularly includes scientific studies regarding the condition and health of fisheries resources, and he often works with the State on interagency fisheries resource studies. Mr. Borkholder serves on several committees related to his fisheries management work, including the Brook Trout Subcommittee of the Lake Superior Technical Committee, and the Lake Sturgeon Subcommittee of the Lake Superior Technical Committee. Mr. Borkholder has a B.S., *cum laude*, in Biology, from the University of Illinois and a M.S. in Fisheries Sciences from Virginia Polytechnic Institute and State University. A copy of his resume is attached as Exhibit 5.

Michael W. Schrage, who serves as a Wildlife Biologist for the Fond du Lac Band's Resource Management Division. Mr. Schrage has a B.S. in Wildlife Resources from the University of Idaho as well as a M.S. in Fish and Wildlife Sciences from Virginia Polytechnic Institute and State University. He has

20 years of experience as a wildlife biologist and advises the Band on wildlife resource management on the Reservation and in the territory where the Band hold off-reservation treaty rights. His work includes research and survey work on wildlife populations, wildlife disease, and habitat management. On behalf of the Band, his research and surveys on wildlife, and in particular moose and wolf, are coordinated with the Minnesota Department of Natural Resources. A copy of his resume is attached as Exhibit 6.

In sum, the Band has special expertise on the environmental issues that are presented by the proposed mine. The CEQ regulations provide that the lead agencies shall "use the environmental analysis and proposals of cooperating agencies with . . . special expertise, to the maximum extent possible consistent with its responsibility as lead agency." 40 C.F.R. §1501.6(a)(2). In addition, the CEQ's guidelines confirm the importance of incorporating comments of the cooperating agency with special expertise on a subject wherever possible: "If the lead agency leaves out a significant issue or ignores the advice and expertise of a cooperating agency, the EIS may later be found to be inadequate." *See* Council on Environmental Quality, *40 Most Asked Questions Concerning CEQ's National Policy Act Regulations*, 46 Fed. Reg. 18026, 18031 (March 21, 1981).

3. History of the Band's participation in the environmental review.

The Band has provided comments and recommendations at each stage of the environmental review. The Band provided substantive comments on the 2009 DEIS, concluding with our opinion that:

> "...the DEIS as published does not contain sufficient detail or complete analysis to ensure that environmental consequences of the Project have been fully considered, and the public provided opportunity for review. The deficiencies identified throughout the EIS process by the tribal cooperating agencies have been rarely addressed, let alone incorporated into the analysis.[4]"

In the Band's comments on the 2009 DEIS, we identified outstanding significant issues including:

- Elimination of the underground mining alternative
- Inadequacy of scoping process
- Need to inlcude the proposed land exchange in this EIS process
- Full discussion of appropriate financial assurance for reclamation, remediation and restoration of resources
- Long-term treatment of contaminated water/consistency with maintenance-free closure goals
- Clear discussion of PolyMet liabilities for legacy contamination, and inclusion of existing levels of groundwater contaminants in modeling predictions
- Inadequate water quality impacts analysis
- Project's effect on existing water quality impairment (mercury bioaccumulation)
- Project's effect on wild rice waters (sulfate loadings)
- Project's effect on wildlife corridors
- Project's effect on air quality (new source of mercury; visibility in Class 1 airshed)
- Inadequate analysis of geotechnical stability (waste rock stockpiles, tailings basin,

[4] *See,* FDL DEIS comments Feb 2010.

hydrometallurgical residue cells)
- Inadequate hydrologic and geochemical characterizations using all existing data; insufficient new data to support modeling and assumptions
- Inadequate assessment of indirect impacts to wetlands
- Inadequate cumulative effects analysis, across all resource categories
- Inadequate analysis of impacts to the 1854 Ceded Territories and exercise of treaty rights
- Inadequate analysis of environmental justice issues
- Inadequate analysis of climate change impacts

The 2009 DEIS was sharply criticized by the U.S. Environmental Protection Agency, which determined that the Project would result in unacceptable and long-term water quality impacts. EPA rated it "Environmentally Unsatisfactory I Inadequate IES (EU-3)" – a failing grade. Following receipt of comments on the 2009 DEIS, changes were made to the proposed Project. These changes sought to address EPA's concerns about the water quality impacts, and also included environmental review of proposed land exchange of US Forest Service lands for other lands that would be provided by PolyMet in connection with the development of the proposed mine.

In October 2010, the Co-lead agencies announced their intent to prepare a supplemental EIS to both "supplement and supersede the Draft EIS" and "respond to concerns about wetlands and water quality issues associated with the NorthMet mining and ore processing proposal, located in Northeast Minnesota, as identified by the US Environmental Protection Agency and other commentors." 75 Fed. Register 62756-58 (October 13, 2010).

In November 2013, a Supplement Draft EIS was released, and the Band submitted substantive comments on it. Based on the Band's review, the only significant problem in the 2009 DEIS which was cured by the 2013 SDEIS was the inclusion of the Land Exchange Proposed Action in the analysis (although, as set out in the Band's subsequent comments, the impacts of the proposed land exchange were not adequately evaluated). After our extensive evaluation of the SDEIS and supporting technical documents, we concluded that there will undoubtedly be *significant and unmitigated impacts* to natural and cultural resources that the tribal cooperating agencies have consistently elevated to the attention of the Co-lead agencies[5]. There will be *significant and unmitigated tribal resource losses* within the 1854 Ceded Territory and the Lake Superior basin, including the St. Louis River watershed. The NorthMet Project Proposed Action and Land Exchange Proposed Action would eliminate critical habitat on which the Band's treaty protected rights depend, impair other lands and waters and the game, fish and plants which depend on those resources.

In our comments on the 2013 SDEIS, we made the following recommendations:

- The SDEIS must be revised to fully evaluate reasonable alternatives in the SDEIS, including identifying the federal agency preferred alternative and the LEDPA (Least Environmentally Damaging Practicable Alternative).
- No mitigation has been identified in the SDEIS for this permanent loss of lands and resources (natural and cultural) to the 1854 Ceded Territory. The public interest determination must

[5] *See,* FDL SDEIS comments March 2014.

include a specific finding that "The intended use of the conveyed Federal land will not substantially conflict with established management objectives on adjacent Federal lands, including Indian Trust lands" (36 C.F.R. 254.3(b)(2)(ii)). This threshold has not been met, and **the Fond du Lac Band objects to the implementation of the Land Exchange Proposed Action.**

- The SDEIS must be revised, with significant additional study, to appropriately evaluate closure, mitigation, reclamation, and perpetual treatment cost estimates. The SDEIS requires substantially more public transparency and less equivocation on what is arguably one of the most fundamental issues at stake for this Project: perpetual treatment.
- The SDEIS does not provide sufficient information for the public to understand whether the NorthMet Project Proposed Action will be required to remediate identified Areas of Concern within the former LTV property, subject to investigation and remediation under the state's Voluntary Investigation and Cleanup Program before commencing Project operations, or be allowed to defer remediation until closure.
- There is a demonstrated need for significant improvements to the modeling evaluations. The lack of fracture and fault analysis is also **major deficiency** of this SDEIS.
- The water quality analysis is **fundamentally inadequate**; it must be redone.
- **The SDEIS evaluation of mercury impacts is deficient**, and the conclusion of no mercury impacts downstream in the St. Louis River watershed is not supported by the information presented.
- We consider the high probability of continued degradation of remaining wild rice stands in the Partridge and Embarrass River watersheds as a result of the NorthMet Project to be an **unacceptable environmental impact**.
- The most significant deficiency in the SDEIS analysis of wildlife impacts is its failure to critically analyze potential impacts to moose.
- Uncontrolled contaminant loading from existing mine facilities, along with elevated constituents from the Proposed Project, have the potential to affect the successful establishment of a sustainable lake sturgeon fishery throughout the St. Louis River. This potential impact should be fully evaluated in the SDEIS.
- A cumulative analysis of fibers expected from the site along with fibers currently being emitted from other sources should be performed. Human health risk assessments should be expanded to include scenarios of worker exposure to amphibole fibers. **Fugitive dust impacts must be evaluated for human health and environmental impacts**.
- The SDEIS simply does not address the potential lack of integrity or risk of failure when constructing a hazardous waste facility within a wetland.
- The Co-lead agencies' approach to predicting indirect impacts to wetlands is an overly simplistic method **based upon a flawed concept of hydrology at the mine site. This remains a major deficiency in the SDEIS**.
- The Band specifically requests that **financial assurance for potential indirect wetland effects and monitoring be secured.**
- The Band **objects to the approval of any further out-of-watershed mitigation credits or restoration for impacts to irreplaceable high quality aquatic resources of national importance, which include all remaining unimpacted wetlands within the St. Louis River watershed/Lake Superior Basin.**
- Tribal cooperating agencies believe the **CEAA for land use should encompass the 1854 Ceded Territory,** as the signatory Bands have lost access to substantial portions of the 1854 CT and the resources within.

- The tribal cooperating agencies believe the **water quality and hydrologic cumulative effects analysis should incorporate the entire St. Louis River watershed**.
- Tribal cooperating agencies consider a 216,300 acre area bounded by the St Louis River, Lake Superior, Lake Vermilion and the Beaver Bay to Vermilion Trail to be a Tribal Historic District, and the pertinent area for consideration of cumulative effects to cultural resources.

During the 90-day public comment period on the SDEIS, the tribal cooperating agencies were permitted to staff an information table at the three scheduled public meetings in Duluth, Aurora and St. Paul. The tribal agencies prominently displayed and distributed maps, graphics and fact sheets clarifying our concerns and the supporting technical information, and engaging with citizens to answer questions. Also prominently displayed was a placard stating:

> *The Bois Forte, Fond du Lac and Grand Portage Bands are cooperating agencies in the development of the Environmental Impact Statement for the PolyMet Project.*
>
> *Although each Band is sovereign and unique, none have expressed opposition to mining in the region. It is the belief that mining should be done in a responsible way that meets regulations and minimizes environmental impacts. Bands strive to preserve and protect resources now and for future generations.*

Following receipt of more than 58,000 comments on the SDEIS, the Co-lead agencies prepared a Final EIS. In August 2015, the Band timely submitted comments on a preliminary version of the Final EIS (PFEIS), expressing the Band's concerns that many of the issues raised and recommendation made by the Band were not addressed. Review of the Final EIS released on November 13, 2015 confirms that the Band's concerns about and recommendations regarding the analysis and conclusions reached by the Co-lead agencies were not addressed.

While the Final EIS includes a chapter – Chapter 8 – which undertakes to summarize the Major Differences of Opinion (MDOs) between the Bands as cooperating agencies and the Co-lead agencies, that Chapter 1) reflects the Co-lead agencies' characterizations of the Bands' position, and 2) addresses only the Major Differences of Opinion as of 2013 when the Supplemental Draft EIS was released. Chapter 8 was updated in the FEIS but only to show the Co-lead agencies' additional views. The Chapter was not updated to reflect the additional major differences of opinion identified thereafter – namely an additional error in the groundwater modeling, the correction of which showed the mine site's north flow of the waters to the Rainy River Basin post-closure, which was identified in 2015 when the Band and other tribal cooperating agencies were provided with access to the final hydrologic model. Similarly, while the FEI*S* includes an Appendix C which contains the tribal cooperating agencies' comments and supporting documentation representing major differences of opinion, Appendix C was not updated to include any of the additional documentation provided by the Bands following release of the 2013 SDEIS.

1. Inadequate analysis of Project impacts.

A. Inadequate hydrologic characterizations .

"NEPA requires that the Environmental Impact Statement contain high-quality information and accurate

scientific analysis." *Lands Council v. Powell*, 395 F.3d 1019, 1031-32 (9th Cir. 2005) citing 40 C.F.R. § 1500.1(b). The agency is required to "insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements." 40 C.F.R. § 1502.24; *Environmental Defense v. U.S. Army Corps of Engineers*, 515 F. Supp. 2d 69 (D.D.C. 2007). The agency must demonstrate the reliability of its models and verify the predictions made. *Lands Council*, 395 F.3d at 1035. Where there is incomplete or unavailable relevant data, or the model's analysis is incomplete, the EIS must provide full disclosure of the model's shortcomings. *Id* at 1031-32; see also *Native Ecosystems Council v. U.S. Forest Service.*, 418 F.3d 953, 964-65 (9th Cir. 2005); *Animal Def. Council v. Hodel,* 840 F.2d 1432, 1439 (9th Cir.1988) ("Where the information in the initial EIS was so incomplete or misleading that the decisionmaker and the public could not make an informed comparison of the alternatives, revision of an EIS may be necessary to provide a reasonable, good faith, and objective presentation of the subjects required by NEPA."); see also *Environmental Defense v U.S. Army Corps of Engineers*, 515 F. Supp. 2d 69, 81-83 (D.D.C. 2007) (failure to incorporate known issues, and the omission of other information which served only to allow for a reduction in the proposed mitigation plan violated NEPA).

Mine Site

As detailed in extensive comments submitted by tribal cooperating agencies to the Co-lead agencies over the past eight years, water quantity and water quality analyses for both the Mine Site and Plant Site are inadequate. Subsequent water modeling results, whether deterministic (DEIS) or in the form of probability distributions (SDEIS, FEIS) **are based on flawed understanding of hydrology.** One example of this flawed understanding is the error in baseflow calculations, which is carried forward in the MODFLOW hydrologic modeling.[6] At the mine site, MODFLOW under-predicts the amount of water that would flow into the mine pits and thus under-predicts the amount of water treatment needed for both short and long term closure.

Most of the deficiencies in hydrologic characterization and water modeling dating from the 2009 DEIS and the 2013 SDEIS persist in the 2015 FEIS. In one notable exception, tribal review of the SDEIS led to the identification of a previously unrecognized groundwater flowpath on the east side of the Tailings Basin, which subsequently led to additional PolyMet and Co-lead agency analysis and proposed (but inadequate) mitigation for the FEIS.[7]

But perhaps the most stunning deficiency of this environmental review process has been the continued application of the fundamentally flawed MODFLOW model, which the Co-lead agencies have long-maintained was intended *only* to predict mine pit inflow, but which was inappropriately used for numerous other purposes (i.e., defining contaminant flowpaths from the mine pits at closure; using those flowpaths to define the Area of Potential Effect for cultural and cumulative impacts analysis; critical inputs to the GoldSim water quality model). The MODFLOW model cannot generate reliable outputs for these and other environmental impact predictions, because it was calibrated to conditions that did not exist at the same point in time: water levels in the Northshore Peter Mitchell taconite pits

[6] *See* John Coleman (GLIFWC) memo to Tom Hingsberger (USACE), Erik Carlson (DNR): "PolyMet model calibration to Partridge River Low Flows, March 2, 2012."
[7] FEIS 5-183.

from 1996, and Partridge River baseflows from 1979-1988. Furthermore, the MODFLOW model fails to incorporate the Peter Mitchell pit elevations predicted for closure conditions, which will be 300 feet lower than the bottom of the NorthMet pits. The PolyMet engineers' approach, which has become the Co-lead agencies' approach in the FEIS, is in conflict with accepted modeling methodology and represents an unacceptable calibration error.

Because of refusal on the part of the Co-lead agencies to properly calibrate the MODFLOW model for the Mine Site, GLIFWC staff undertook independent review of the MODFLOW model in order to better characterize the hydrology at the Mine Site and understand potential environmental impacts from the Proposed Project and at closure[8]. By simply correcting the calibration error in PolyMet's model, the model generates results showing clearly that the majority of bedrock groundwater flow from the NorthMet pits and the permanent Category 1 stockpile will move north from the Mine Site towards the Peter Mitchell pit, which outflows to Birch Lake in the Rainy River/BWCAW basin, not south as shown in the FEIS. This fundamental discrepancy invalidates any conclusions in the FEIS about Mine Site water quality at closure, and the lack of any analysis of impacts to Birch Lake and the BWCAW is a major FEIS deficiency.

The FEIS maintains, despite compelling evidence from tribal model analysis, that

> *"The Presence of perennial streams and watershed divides at both the Mine Site and Plant Site constrain the hydrologic effects of the NorthMet Project Proposed Action to the Partridge River and Embarrass River watersheds. There are two surficial groundwater and surface water hydrologic barriers between the Mine Site and the Rainy River Watershed (which is hydrologically connected to the BWCAW, including:*
>
> - *High ground north of the partridge River that creates a watershed divide separating the Superior Basin and Rainy River Watershed, which prevents surface water from passing between the two. This major watershed divide is included in the National Atlas, as well as in USGS and MDNR data.* [9]

And:

> *After Project operations, the only appreciable non-treated mine water leaving the Mine Site would be about 10 gpm of groundwater seepage in the surficial aquifer that would migrate south and eventually be released to the Partridge River.*[10]

And:

> *During reclamation and closure and post-closure maintenance, small volumes of water are predicted to flow from the pits into the downgradient surficial groundwater. These untreated pit releases would include East Pit backfill pre water into the East Pit Category 2/3 Surficial Flowpath (beginning year 20) and West Pit lake water into the West Pit*

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[8] *See*, Correspondences from GLIFWC to Co-lead Agency Project Managers, *Comments on PolyMet mine site contaminant northward flowpath and groundwater model calibration*, August 11, 2015; and, *Comments on NorthMet FEIS and Section 404 Permitting Re: Mine site groundwater model calibration,* December 14, 2015.

[9] FEIS 5-5.

[10] FEIS 5-7; see also Figure 5.2.2-7, Mine Site Surficial Groundwater Flowpaths.

> *Surficial Flowpath (beginning year 48). These releases to surficial groundwater would continue in perpetuity. Groundwater in these flowpaths would flow downgradient and eventually reach the Partridge River.*

Despite tribal analyses that firmly dispute this characterization of groundwater hydrology at the Mine Site, the Co-lead agencies have concluded that their flawed approach represents the most likely scenario, but that any future evidence that groundwater is flowing northward towards the Peter Mitchell pit could be solved through "contingency mitigation"[11]such as grouting pit walls, lowering West Pit and/or East Pit water levels, groundwater extraction wells, or artificial recharge. Unfortunately, each of these potential contingency mitigation actions, individually or in combination, actually represents a significant departure from the existing Project, as it has been defined for environmental review. There has clearly not been adequate evaluation or analysis of the relative feasibilities, never mind costs, associated with these alternative mine/reclamation plans, to fulfill NEPA requirements.

Actually, the Co-lead agencies eventually agreed that GLIFWC's MODFLOW analysis is correct, and that the northward flowpath *would* result when the correct Peter Mitchell pit elevations are used for calibration.[12] But they have also put forward, as their official position, the Project Proponent's rationale for the unlikelihood of northward groundwater flow at closure: that a groundwater mound would form in the bedrock underlying the Hundred Mile Swamp (north of the Mine Site), and this mound would prevent northward flow of groundwater at closure[13]. This scenario is physically impossible,[14] but despite repeated requests by the tribal cooperating agencies to have a technical discussion with the Co-lead agencies about this theoretical groundwater mound, they have flatly refused to do so. It is truly unfortunate, in the context of an environmental impact disclosure process, that this absurd basis for rationalizing the dismissal of a valid technical criticism has apparently justified the Co-lead agencies 'waving away' serious consideration of likely Project impacts.

This conclusion represents a new Major Difference of Opinion between the tribal cooperating agencies and the Co-lead agencies that is not presented in Chapter 8, and the tribes have presented sufficient evidence to justify the need for independent analysis of the Project's hydrologic characterization.

Plant Site

At the Plant Site, insufficient consideration of bedrock fracture has resulted in claims of virtually complete seepage collection by PolyMet engineers[15], and this conclusion has been accepted by the Co-

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[11] FEIS 5-240.

[12] *See,* Interagency Technical Memorandum, *Co-lead Agencies' Response for GLIFWC Comments on Calibration of the Mine Site MODFLOW Model to Partridge River Groundwater Baseflows,* October 12, 2015.

[13] *See,* Interagency Technical Memorandum, *Co-lead Agencies' Consideration of Possible Mine Site Bedrock Northward Flowpath,* Oct. 12, 2015.

[14] *See,* Correspondence from GLIFWC to the Co-lead Agencies Project Managers, *Comments on NorthMet FEIS and Section 404 Permitting Re: Groundwater Mound,* December 13, 2015.

[15] PolyMet 2015j.

lead agencies and presented in the FEIS[16]. However, no bedrock monitoring wells were installed near the tailings basin. Storage coefficients used to model the entire Plant site area are not consistent with any peer reviewed scientific literature.

The FEIS assumes that 100% of tailings surface and groundwater seepage would be captured on the east side and south side of the tailings basin,[17] and that 100% of the surface seepage and 90% of the groundwater seepage would be captured at the north, northwest and west toes of the basin.[18] These assumptions are not consistent with expert opinions from geologists, submitted in response to the SDEIS. For example, geologist J.D. Lehr was critical of the "simplistic and cursory treatment of the role that bedrock fractures may play in the transmission of groundwater" at the tailings basin, and objected to the assumption of a "no-flow boundary" underneath the basin, which implied that groundwater flow through bedrock at the site "is so insignificant that it can be ignored". He considered a "major omission" the failure to identify fractures or assess groundwater flow through fractured bedrock, and noted that the result was "unsupported assumptions and inadequate information regarding groundwater flow at the tailings waste site". He was also critical of the failure to include any hydraulic testing of bedrock, and emphasized that "what the SDEIS requires is data." Based upon his professional expertise in regional geology, Lehr concluded "bedrock fractures will play a significant role in groundwater and contaminant transport" at the tailings basin.

Similarly, Anthony Runkel, Chief Geologist with the Minnesota Geological Survey, stated in his *Comment on the NorthMet Supplemental Draft Environmental Impact Statement* (March 13, 2014),

> *Investigations aimed at characterizing the hydrogeologic conditions of fractured bedrock for the purposes of predicting solute transport in crystalline bedrock elsewhere on the Canadian Shield routinely use a number of well-known techniques that were not applied in the hydrogeologic studies at the NorthMet Mine Site and Plant Site/Tailings Basin area. A key component of those investigations is the acquisition of hydraulic and water chemistry data at relatively discrete intervals of bedrock, with the focus on fracture characterization. In part this is accomplished through testing and water sampling of boreholes constructed with relatively short open hole intervals at variable depths (e.g. "nested" wells) and/or discrete interval packer testing and water sampling of long open holes. When these techniques have been used in generally similar hydrogeologic settings elsewhere on the Canadian Shield, the results support hydrogeologic conceptual models that differ substantially from those proposed for the Duluth Complex and Giants Range Batholith described in the SDEIS. Of particular significance for solute transport, the conceptual models commonly include key fractures or fracture zones of relatively high hydraulic conductivity, and multiple flow systems within the bedrock at individual sites. These flow systems are variably connected to the surface water system, have variable residence times, can have upward and downward vertical gradients within a local area, and horizontal flow directions that differ from one another.*

[16] FEIS 5-181; Table 5.2.2-27.
[17] FEIS 5-8, 5-102.
[18] FEIS 5-186.

The data collected thus far from the proposed NorthMet Mine Site and Plant Site/Tailings Basin area are not sufficient to recognize the kinds of hydrogeologic features known to be characteristic of other crystalline bedrock settings on the Canadian Shield, described above. Nor are the data sufficient to adequately support the simpler conceptual model currently depicted in the SDEIS.

Surface Hydrology

The Project XP-SWMM model is based on a stream gauging station for the Partridge River that is seventeen miles from the mine site and the data from that station are twenty years old[19]; and stream gauging data for the Embarrass River that is based in data that is more than fifty years old from eleven miles downstream.[20] Therefore, the results are highly unlikely to be representative of current conditions at the mine or plant site. This baseline hydrologic data deficiency has been carried forward from the 2009 DEIS and the 2013 SDEIS, despite ample time and opportunity to collect sufficient new hydrologic data.

B. Inadequate water quality impacts analysis.

"Hard rock mining affects fresh water through heavy use of water in processing ore, and through water pollution from discharged mine effluent and seepage from tailings and waste rock impoundments."[21] Acid mine drainage ("AMD") is one of the greatest environmental liabilities associated with mining, especially in pristine, water-rich environments like the Project mine site, that have economically and ecologically valuable natural resources.[22] There are no hard rock surface mines that exist today that can demonstrate that AMD can be stopped once it occurs on a large scale.[23] Inaccurate pre-mining characterization and interpretation often results in a failure to recognize or predict impacts to water quality and aquatic life.[24] Evidence from literature and field observations suggests that permitting large scale surface mining in sulfide-hosted rock with the expectation that no degradation of surface water will result due to acid generation imparts a substantial and unquantifiable risk to water quality and fisheries.[25]

In a report comparing predicted and actual water quality at hard rock mines, two types of **characterization failures** were identified that led to differences between the predicted water quality in

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[19] *See Water Modeling Data Package vol. 1 Mine Site version 13, December 29, 2014, Barr Engineering.*
[20] *Id.*
[21] Safe Drinking Water Foundation, Mining and Water Pollution, *available at* (http://www.safewater.org/PDFS/resourcesknowthefacts/Mining+and+Water+Pollution.pdf (last visited December 10, 2015).
[22] Reclamation Research Group (Bozeman, MT) for USFWS Anchorage, Alaska, "Acid Mine Drainage and Effects on Fish Health and Ecology: A Review" (2004), Ex. G.
[23] Earthworks Factsheet, "Hardrock Mining: Acid Mine Drainage," *available at* http://www.earthworksaction.org/pubs/FS_AMD.pdf(last visited December 10, 2015).
[24] Reclamation Research Group, "Acid Mine Drainage...,"Ex. G.
[25] *Id.*

EIS documents and the actual water quality either during or after mining began.[26] These included:

(1) insufficient or inaccurate characterization of the hydrology
The authors reported primary causes of hydrologic characterization failures as overestimations of dilution, lack of hydrological characterization, overestimations of discharge volumes, and underestimations of storm size.[27]

(2) insufficient or inaccurate geochemical characterization of the proposed mine.[28] The primary causes of geochemical characterization failures were identified as lack of adequate geochemical characterization, in terms of sample representativeness and sample adequacy.[29]

The primary causes of **mitigation failures** were that mitigation measures were not identified, were inadequate, or were not implemented; waste rock mixing and segregation was not effective; liners leaked; tailings were spilled; or embankments failed, and land application discharge was not effective.

The NorthMet FEIS includes **all** of these characterization failures.

Perhaps more troubling, however, is the manner in which water quality impacts of the Proposed Project are communicated in the FEIS. In the Executive Summary (ES-35, 36), the Co-lead agencies' statements are concise and reassuring:

> *With the proposed engineering controls, the water quality model predicts that the NorthMet Project Proposed Action would not cause any significant water quality impacts because: 1) exceedances of the P90 threshold did not occur, 2) the NorthMet Project Proposed Action concentrations were no higher than concentrations predicted for the Continuation of Existing Conditions Scenario, 3) the frequency or magnitude of exceedances for NorthMet Project Proposed Action conditions was within an acceptable range, or 4) the effects were not attributable to NorthMet Project Proposed Action discharges.*
>
> *The water quality model predicts that the NorthMet Project Proposed Action would not result in significant changes to sulfate concentration in the Partridge River, but would significantly decrease sulfate concentration in the Embarrass River. Furthermore, the engineering controls would provide a high degree of reliability and flexibility to ensure that the NorthMet Project Proposed Action would not cause or contribute to an exceedance of evaluation criteria for sulfate in the future.*

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[26] Kuipers & Assocs., "Comparison of Predicted and Actual Water Quality at Hardrock Mines," (2006), *available at* http://www.earthworksaction.org/library/detail/comparison_of_predicted_and_actual_water_quality_at_hardrock_mines/#.Ux-_2D9dWNY (last visited December 8, 2015).
[27] *Id.*
[28] *Id.*
[29] *Id.*

However, despite extensive review of the several hundred pages of Section 5.2.2, Water Resources found in Chapter 5, Environmental Consequences, it is difficult to find a clear or simple statement regarding the Proposed Project's *ability to meet Minnesota water quality standards*. The FEIS does not speak in terms of 'compliance', but rather 'probabilities of exceedances of evaluation criteria', which are not synonymous with water quality standards. In presenting only modeled probabilities and frequency distributions in their "data" tables and figures, it is challenging, if not impossible, for the general public to understand the significance of the numerical information in the FEIS.

Evidently, the public is expected to uncritically accept the Project proponent's conclusion that a 700-ft deep open pit sulfide mine, with a 526-acre permanent reactive waste rock stockpile, a pit lake requiring water treatment in perpetuity, a tailings basin that has already contaminated ground and surface water that now will also host reactive sulfide tailings, and a permanent hazardous waste facility constructed within a wetland, will collectively result in only two exceedances of water quality standards – and they are not even directly attributable to the Project Proposed Action! This astonishing conclusion is a result of flawed modeling assumptions (baseflow, hydraulic connectivity, etc.), dubious decisions on data usage (omitting 'outliers', concentration caps, etc.), fuzzy compliance thresholds, and inordinate reliance on engineering controls that must perform flawlessly, most of them in perpetuity. In short, the assurances provided in the FEIS Executive Summary are not supported by the underlying analysis.

Surface water quality remains insufficiently characterized or left uncharacterized, and the defects in analysis are profound in this area. The limited data used indicates that surface waters have already been adversely impacted by mining activity, which should give rise to more scrutiny, not less.[30] Contaminant transport modeling suggests that the Project will cause manganese, aluminum, and sulfate to exceed Minnesota Water Quality Standards ("MN WQS").[31] Mercury, sulfate, and specific conductance already exceed surface water criteria in surface water samples collected near the tailings basin at nearby Area Pit 5, and mercury and aluminum exceed surface water criteria in the Partridge River downstream of Colby Lake.[32] Aluminum, iron, manganese, and mercury all exceed MN WQS in Colby Lake.[33] Contaminants from the Project will likely contribute additional loading to these existing exceedances of MN WQS in the Embarrass River, Colby Lake, and the Partridge River. It appears that, as a result of the Proposed Project, arsenic will exceed drinking water standards in Colby Lake.[34] There have not been any water samples collected from lakes in proximity to the tailings basin (Hiekkilla, Mud, Kaunonen, or Hay Lakes) to determine if the pollutants found in the surface and groundwater at the existing tailings basin have caused contamination of those waterbodies.

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[30] Tech. Docs. RS22, RS63, RS74.

[31] *See, e.g.*, Minn. R. §§ 7050.0220; 7050.0221 (Class 1 waters (domestic consumption): manganese 50 ug/l, aluminum 200 ug/l); 7050.0222 (WQS for Class 2 waters (aquatic life and recreation): mercury 1.3 ng/l, aluminum 87 ug/l); 7050.0224 (Class 4 waters (agriculture and wildlife): wild rice present sulfate 10 mg/l)).

[32] Tech. Docs. RS63, RS64.

[33] *Id.*

[34] FEIS 5-170.

Plant Site

Groundwater contamination from previous mining activities persists near the LTVSMC tailings basin, more than fourteen years after operations ceased. Over the decades of operations at the LTVSMC tailings basin, thousands of gallons per minute of tailings basin water were discharged through the bottom of the basin into groundwater.[35] This plume of contaminated water has been slowly moving down gradient into surrounding wetlands and the Embarrass River.[36] The monitoring wells that do exist near the tailings basin have concentrations of pollutants including iron, sulfate, manganese, aluminum, and fluoride that exceeded drinking water standards.[37] But because of the limited distribution of monitoring wells, the extent of the existing contaminant plume is not known. No bedrock monitoring wells have been drilled in the vicinity of the tailings basin. However, domestic wells near the northern property line show substantial contamination of the groundwater aquifer.[38] Regardless, modeling of PolyMet contaminants at the tailings basin did not take existing pollutant concentrations into account, and pretends that existing contamination is an acceptable "baseline" from which only *new* contamination should be measured.

> The FEIS makes the broad, unqualified assertion that:
>
> *Design and performance modeling of the containment system predict that it would achieve complete capture of groundwater moving via the surficial aquifer and upper bedrock (PolyMet 2015i).*[39]

The claim that 100% of the seepage from the tailings basin can be captured is implausible and is unsupported by authority. The Tribes requested that the Co-lead agencies or their contractor provide references for a similar facility to the 90% or greater capture efficiency rate they were confident could be achieved (which was also claimed in the SDEIS); they were not able to provide a single example from anywhere in the world[40]. The Co-lead agencies provided a single citation from a USEPA guidance document (generally intended to inform solid waste sites) that revealed:

- [M]most barriers in the study have been in place for fewer than 10 years; therefore, long-term performance can only be extrapolated…
- All sites included in the study were existing sites that had vertical barriers and, in many cases, caps.
- None of the sites has an engineered bottom barrier. Therefore, the effect of leakage through aquitards was not evaluated in this study.[41]

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[35] Tech. Doc. RS74B.
[36] *Id.*
[37] MPCA Memo: Compliance Schedule Report, Cliffs Erie, LLCHoytLakesTailingsBasin Area NPDES Permit #MN0054089 (Dec. 19, 2002).
[38] *See* DEIS at 4.1-14 (citing Barr Engineering Memo: Results of Tailings Basin Hydrogeological Investigation. (June 2, 2009).
[39] FEIS 5-76 Contaminant Transport from the Tailings Basin.
[40] ERM Responses to Action Items From January 27 Cooperating Agency Meeting, Feb. 11, 2014.
[41] US EPA, Evaluation of Subsurface Engineered Barriers at Waste Sites, Aug. 1998.

Regardless of this study's applicability (or lack thereof) to seepage capture systems proposed for the PolyMet Project, the EPA found that

- 10% of the reviewed containment systems failed to meet the desired performance objectives and required corrective action.
- An additional 19% of the evaluated facilities did not have sufficient data to conclude weather the containment system was operating successfully or not.
- There is no information on the effectiveness of any of these facilities at timeframes remotely comparable to what will be required for PolyMet. In the EPA study, 'long term' is considered 30 years, whereas the seepage capture requirements for PolyMet facilities are on the order of centuries for the flotation tailings basin and category 1 stockpile, and in perpetuity for the hydrometallurgical residue facility.
- None of the facilities in the study are as large as the one proposed by PolyMet.

A search for examples similar to the Project Proposed Action identified the Zortman-Landusky mine in Montana, which installed containment and pumpback systems to be used in conjunction with a wastewater treatment facility. However, they "did not capture all surface and subsurface drainage"[42]. At the Molycorp, Inc., mine site in New Mexico, "The pathway for contaminant migration is the leaching of tailing seepage downward from the tailing facility to ground water that migrates through fractures to surface water[43]."

Examples of similar seepage capture systems installed and operating in northeastern Minnesota are at the US Steel-MINNTAC tailings basin,[44] and the former LTV tailings basin seep SD0026[45] (the same tailings basin PolyMet proposes to re-use), and demonstrate capture rates of **less than 60%.** The US Steel -MINNTAC tailings basin is of similar age and design as the former LTV tailings basin that PolyMet proposes to reuse. Both are large, unlined facilities that are designed to allow massive volumes of water to seep to surface and groundwater in order to maintain structural stability. Both facilities have been discharging many thousands of gallons per day of high sulfate wastewater into the environment for decades. US Steel-MINNTAC, as required under a schedule of compliance for their long-outdated NPDES permit, has begun constructing a multi-phase seepage capture system that is intended to bring the facility into compliance with applicable water quality standards. The capture system is similar to the one proposed by PolyMet, in that it consists of a trench for capturing seepage and a pumping system that would return tailings effluent back into the facility.

The US Steel-MINNTAC system was originally intended to extend to bedrock, but that proved impossible in some locations because of the presence of large boulders within the glacial till that hindered construction. Because the surficial geology is similar at the LTV facility, it is likely that similar difficulties will be encountered by PolyMet, which will significantly decrease expected seepage capture efficiency.

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[42]U.S. EPA, Costs of Remediation at Mine Sites(January 1997), 4.2.12 Case Study No. 12, p. 34, describing the Zortman-Landusky Mine, Montana, *available at* http://www.epa.gov/wastes/hazard/tsd/ldr/mine/costs.pdf (last visited March 3, 2014).

[43] US EPA, Molycorp, Inc. Site Proposed Cleanup Plan(December 2009), p. 17, *available at* http://www.epa.gov/region6/6sf/newmexico/molycorp/nm_molycorp_proposed_cleanup_plan.pdf.

[44]Letter, from J. Thomas, MPCA to T. Moe, U.S. Steel Corp., Jan. 8, 2008.

[45] Telephone and email communications with John Thomas, MPCA, Feb. 7, 2014.

It is important to note that seepage capture of greater than 95% would be required at MINNTAC in order to achieve compliance with applicable water quality standards.[46] However, at this facility, this high capture efficiency was concluded to be infeasible, and MINNTAC predicted that their capture efficiencies would not exceed 60%; actual performance of the capture system is **below 50%.** The primary purpose of this system was to achieve compliance with MN WQS, yet the capture system alone will not be able to achieve that goal. The primary purpose of the seepage capture at the Proposed Project is to achieve compliance with MN WQS, but it is not likely to be successful, based upon limited but relevant regional experience.

The FEIS acknowledges that seepage from the existing LTV tailings basin continues to drain south to Second Creek long after LTV operations have ceased[47]. PolyMet and the state regulatory agencies are fully aware that that this seepage pumpback system is not nearly as effective as claimed in the SDEIS[48]. According to MPCA staff, the pumpback system has not resulted in the water quality improvements required under the Consent Decree, so there are two modifications currently proposed by Cliffs Natural Resources: 1) dewater the pond that is an additional source of water contributing to water quality concerns (pending a US EPA wetlands determination); or 2) create an additional barrier (dam) for seepage collection and pumpback between the existing dam and monitoring station SD026.[49] But the need for evaluating water quality impacts is simply dismissed by the statement "PolyMet has committed to future upgrades to achieve 100% capture by this system if the NorthMet Project Proposed Action is approved."[50] There has been no bedrock hydrogeologic study at this site to even determine what possible engineering alternatives would be effective in capturing 100% of the seepage that surfaces to the south of the tailings basin.

There is simply no evidence to support the rosy scenario that PolyMet will be able to capture 97% of the shallow seepage and 90% of the deep seepage from an unlined, purposefully 'leaky' tailings basin, despite the Co-lead agencies' assurances. The FEIS has not adequately evaluated the impacts of polluted tailings basin seepage to Second Creek and the Partridge River.

The unsupported prediction of complete seepage capture efficiency is unfortunately carried forward into other critical analyses. The FEIS claims that construction of a groundwater containment system along the north, northwest and west sides of its unlined tailings basin "would capture virtually all of the Tailings Basin seepage presently flowing in those directions to restore water quality" (FEIS 5-186 (based upon PolyMet 2015(d)). Without even a single bedrock monitoring well installed to confirm or deny this assumption, the FEIS maintains that this is prediction is "conservative", because the modeling done by PolyMet assumes that bedrock hydraulic conductivity is "negligible" (FEIS p. 5-29). Disturbingly, the

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[46] Subsurface Evaluation and Seepage Evaluation Report, MINNTAC Tailings Basin, Mountain Iron Minnesota, US Steel Corp., 2008.
[47] FEIS 5-183, A-625.
[48] Letter of Cliffs to John Thomas, MPCA, Compliance and Enforcement, May 7, 2013, regarding planned improvements to SD026 pump-back system, copying Kevin Pylka, PolyMet Mining, Inc.
[49] Telephone conversation between John Thomas, MPCA, and Margaret Watkins, Grand Portage.
[50] FEIS 3-120; also appears as boilerplate response to multiple comments received on SDEIS on incomplete contaminated seepage capture at SD026.

tailings basin model uses storage coefficients that are not found anywhere in peer reviewed scientific literature[51].

These parameters are highly critical for establishing a reliable model, because the volume of groundwater that a geologic formation can contain (storativity or storage coefficient) and the rate of flow (hydraulic conductivity) are functions of the amount of open pore spaces or fractures/faults in rock, the quantity of water that infiltrates from the surface, and the groundwater gradient. The storage coefficient incorporated in the plant site model (including the tailings basin) for bedrock is 0.20, and for the surficial deposits 0.0002 (FEIS 5-46, Table 5.2.2-9), suggesting that the bedrock contains several orders of magnitude more water than the surficial deposits. When questioned about these extraordinary storage coefficients, the Co-lead agencies' explanation was that the model was "calibrated to match predicted and measured groundwater levels[52]". Essentially, this model is simulates a bedrock 'storage tank' where large volumes of water go in but virtually nothing comes out. Since this is not conceptually accurate, the modeled hydraulic conductivity and/or modeled storage coefficients cannot be relied upon to estimate the amount of seepage that will bypass the seepage capture system, or the amount of time before seepage upwells to surface waters in adjacent wetlands and the Embarrass River, *where MN WQS must be met.*

Mine Site

Flawed hydrologic and geologic characterization carry over to predictions of water quality. From Runkel's 2014 *Comment:*

> *…Ultimately the conceptual model for the Duluth Complex proposed in the SDEIS is that of a "highly competent" bulk rock mass with a uniformly very low hydraulic conductivity. Numerical models based on this characterization lead to solute transport travel times exceeding one thousand years (e.g. summaries on pages 4-45 and 5-33 of SDEIS).*
>
> *The SDEIS conceptual model for the Mine Site could be much better supported. First, inferences about the likelihood of extensive fractures of hydraulic significance in the Duluth complex are based on the incorrect premise of insufficient post-emplacement tectonic activity to generate such features in the region. Faults of potential hydraulic significance are common in the Duluth Complex, including near the Mine Site ((Minnesota Geological Survey (MGS) S-21 and/or MGS M-119)), and the tectonic history, as well as glacial and erosional history of the region, includes activity capable of generating extensive fracture systems that post-date emplacement of the complex. Second, the manner in which data were collected at the Mine Site, especially the use of long open hole intervals for hydraulic testing and water sampling, is insufficient to test the hypothesis that extensive high transmissivity fractures or fractured zones are absent. Discrete fractures and fractured zones commonly go unrecognized when hydrogeologic measures such as water chemistry, hydraulic conductivity, and heads are*

[51] USGS, Trainer, F.W. and Watkins, Base-flow Characteristics of Streams, Water Supply Paper 2457 (1975).
[52] ERM Responses to Action Items from January 27 Cooperating Agency Meeting Feb. 11, 2014.

> *averaged across several tens to hundreds(most boreholes at the site) of feet of bedrock. Scale effect is also a factor. Boreholes are less likely to intercept hydraulically active fractures than the proposed pit walls. This also should be discussed as part of the SDEIS.*
>
> *…Improved understanding of the hydrogeologic system in the Duluth Complex at the Mine site could be achieved by the acquisition of hydraulic and water chemistry data at much more discrete intervals. This would include testing and sampling of boreholes with shorter open hole intervals at variable depths (e.g. "nested" wells) and/or discrete interval packer testing and water sampling of long open holes. These techniques, along with information that can be acquired from a number of borehole geophysical tools, have been routinely applied in similar crystalline rock settings to characterize the hydrogeology of fracture systems. The hydraulic and water chemistry information from these discrete intervals in a number of boreholes would ultimately lead to an improved conceptual model for the prediction of solute transport.*

The FEIS maintains that mine pit dewatering impacts will be very limited or non-existent based on an assumption carried forward from the DEIS that there is little or no connection between the bedrock and surficial aquifers.[53] This assumption is based solely on an unsupported "professional opinion,"[54] when in fact there is ample evidence that there may be substantial connection between the bedrock and surficial aquifers.[55] Such a connection indicates that dewatering the mine pits could cause significant drawdown of the water table in the surficial aquifer, potentially dewatering wetlands and ephemeral streams.

Tritium and unionized ammonia nitrogen were found in water samples collected from two deep boreholes in the area where the Project mine pits will be located. Both tritium and unionized ammonia are classic indicators for a strong connection with surface water. Tritium indicates water found in the deep boreholes was surface water that originated post-1952, during or after nuclear testing.[56] The boreholes are approximately one mile southwest of the Peter Mitchell Pit, which is the closest and most likely source of this pollution. Production at the Northshore mine started in 1955. Review of the Peter Mitchell Pit discharge monitoring data for SD001[57] from 2006 and 2008 shows the average concentration of unionized ammonia exceeded their 0.04 mg/l NPDES permit limit. Unionized ammonia and tritium in the deep boreholes suggest that travel time of contaminants through bedrock fractures will be on the order of decades, not the hundreds or thousands of years that are assumed in the FEIS. Impacts to surface waters, groundwater, and wetlands for a Project of this size and complexity demand a scientific, data-driven approach rather than one based on opinion and scant, selectively used data.

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[53] FEIS 4-48.

[54] E-mail from John Adams and Michael Liljegren (DNR) to Stuart Arkley (USACE), Op. concerning modeled groundwater drawdown impacts to surface features in the PolyMet CPDEIS, Additional PolyMet Peatland Data/Information (Feb. 1, 2009).

[55] Tech. Docs. RS02, RS10, RS10A, RS74A; Golder 2006.

[56] USGS, Tracing and Dating Young Groundwater, 1999. http://pubs.usgs.gov/fs/FS-134-99/(last visited March 3, 2014).

[57] MPCA What's in My Neighborhood, DMR data for MN0046981-SD-1, 2006 – 2010, *available at* http://www.pca.state.mn.us/customPHP/eda/stationInfo.php?ID=MN0046981-SD-1&ORG=WQDELTA (last visited 8/16/2013).

"Hydrogeologic characterization studies should include geological descriptions of the site, including descriptions of rock types, intensity and depth of weathering, and the abundance and orientation of faults, fractures, and joints. Although difficult to evaluate, the hydrologic effects of fractures, joints, and faults are especially important to distinguish and characterize. Water moves more easily through faults, fractures, and dissolution zones, collectively termed secondary permeability, than through rock matrices. Secondary permeability can present significant problems for a mining facility because it can result in a greater amount of ground water discharge to a mine than originally predicted."[58]

The lack of fracture and fault analysis remains a major deficiency in this FEIS. The map provided by GLIFWC in their SDEIS comments, *Geologic Faults at the PolyMet Mine and Plant Site*[59], indicates:

1. There are several faults extending from Northshore pits to the PolyMet mine site. This may explain why there is ammonia and tritium in the deep borehole samples.
2. There is an inferred fault running right through the area of the Hydrometallurgic Residue Facility. (Not only is the HRF proposed to be constructed within wetland, with a buried stream and springs, but it will also be receiving seepage from the tailings basin and it could be geologically predisposed to facilitate groundwater movement.
3. There is a fault system right where water would exit the tailings basin on the east side. Notice that the inferred fault may connect to other fault systems running east-west to the south of the facility.

The FEIS also diminishes the lessons learned from the Dunka Pit, located on the former LTVSMC site approximately five miles north and east of the PolyMet Project mine site. Within the Dunka Pit, LTVSMC contacted the Duluth Complex and the Virginia Formation while mining for taconite in the Biwabik Iron Formation.[60] By 1991, LTVSMC had removed about 50 million tons of Duluth Complex material from the Dunka pit and placed it in "gabbro" stockpiles.[61] Monitoring of the drainage from these stockpiles beginning in 1976 revealed a decrease in pH and an increase in trace metals.[62] Copper and nickel concentrations as high as 1.7 and 40 mg/l respectively were observed in seepage/run-off from the Duluth Complex waste rock stockpiles and pH was observed as low as 5.0 at seep 1 between 1976 and 1980.[63] Most of the seepage from waste rock piles at the Dunka site was discharged to Bob's Bay in Birch Lake via Unnamed Creek.[64] A 1976-1977 study of trace metals in Bob's Bay found that concentrations of copper, nickel, cobalt, and zinc in the water of the Bay were higher than regional average concentrations

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[58] EPA and Hardrock Mining: A Source Book for Industry in the Northwest and Alaska, Appendix D, Effluent Quality, January, 2003.
[59] Map derived from Morey, G.B., and Meints, Joyce, compilers, 2000, Geologic Map of Minnesota, bedrock geology (3rd edition): Minnesota Geological Survey State Map Series S-20.
[60] EPA Office of Solid Waste: Tech. Doc.: Acid Mine Drainage Prediction, EPA 530-R-94-036 (Dec. 1994), *available at* http://www.epa.gov/waste/nonhaz/industrial/special/mining/techdocs/amd.pdf (last visited December 11, 2015).
[61] *Id.*
[62] *Id.*
[63] *Id.*
[64] *Id.*

and decreased with distance from the mouth of Unnamed Creek.[65] Additionally, it was determined that Unnamed Creek contributed more than 90% of the trace metals load to Bob's Bay.[66] The NPDES permit for this discharge expired in 2005[67] and another variance request is expected. A WWTF located at the site has been inactive because Cliffs Erie, LLC, the owner who acquired the property from LTVSMC, declared bankruptcy and claims it is simply too expensive to continue running.[68] Unfortunately, the passive wetland treatment system did not function well enough to remove nickel and copper in waters still discharging from the mine pit and stockpiles to a concentration that complies with MN WQS.[69]

The potential for water quality impacts from prospecting and mining operations that have contacted the Duluth Complex have long been known to the MNDNR and MPCA.[70] The State of Minnesota spent $4.3 million over three years in the late 1970s to produce the Regional Copper-Nickel Study, a 5-volume compilation of technical information regarding the potential impacts of copper-nickel mining in the Duluth Complex.[71] Nevertheless, predicted water quality impacts and ineffective mitigation methods referenced in the Study were unheeded when the technical documents and FEIS were drafted for PolyMet.

Similarly, the Mining Simulation Project (funded in part by a Minnesota Legislative appropriation of $185,000 to the MNDNR and MPCA) was a cooperative study to identify and resolve environmental issues associated with non-ferrous mining and to anticipate industry and government data needs to address those issues before commercial development occurred in Minnesota.[72] The study clearly identified those state ground and surface water quality regulations that would apply to copper-nickel mining operations in Minnesota, including applying the 10 mg/l sulfate criterion to effluent discharges where wild rice is present; it prioritized nondegradation of both surface and groundwater and protection of groundwater as a drinking water source; and it rejected using natural wetlands for mine effluent treatment ("as a toxic metals dumping ground").[73]

The tribal cooperating agencies have also consistently elevated our concerns for the Proposed Project's potential to adversely impact groundwater quality and quantity. "Groundwater maintains stream flows and wetlands during dry periods, supporting significant ecosystem functions. Groundwater is an important source of drinking water in the Great Lakes Basin, where 8.2 million people, or 82% of the rural population, rely on groundwater for their drinking water."[74] In Minnesota, all groundwater is

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[65] *Id.*
[66] *Id.*
[67] NPDES Permit MN0042579.
[68] Cliffs Erie Variance Request for NPDES Permit MN0042579.
[69] *Id.*
[70] MN Environmental Quality Board, The Minnesota Regional Copper-Nickel Study at Executive Summary (1979).
[71] *Id.*
[72] MNDNR, MPCA, E.K. Lehmann and Associates and the Project Environment Foundation, Report on the Mining Simulation Project (1990).
[73] *Id.*
[74] Great Lakes Science Advisory Board to the International Joint Commission, Groundwater in the Great Lakes, February 2010.

protected for drinking water supplies, "constituting the highest priority use, and as such, to provide maximum protection to all underground waters."[75] When considering water allocations, drinking water is supposed to be considered the highest priority by the MN DNR.[76] According to MPCA's groundwater profile for Northeastern MN including the Project area: "Glacial aquifers are commonly thin and limited in their extent and yield. Bedrock aquifers have limited yield, generally from fractures; groundwater movement is difficult to define. There are no large-scale regional aquifers. The Biwabik Iron Formation is the only source of groundwater for many Iron Range cities."[77]

Yet despite the importance of this critical resource, the FEIS has not adequately evaluated the potential for impacting drinking water sources, and it is clear from the state regulatory agencies' uncertainties about the frequency, volume, and water quality of other mine discharges (i.e., the Peter Mitchell Pit) *even while regulated under permits,* that this issue remains a significant deficiency in the FEIS analysis.

The tribal cooperating agencies have consistently raised concerns about reactive dust and ore fines along the Transportation and Utility Corridor, and potential for water quality impacts to the three streams and wetlands that are crossed within the corridor. Yet these concerns have been repeatedly kicked back and forth between the Air IAP and Water Quality IAP work groups, with neither group ultimately resolving the information and risk analysis gap. The end result of this 'oversight' in the FEIS is that little consideration, discussion, or proposed management of this potential water and wetland quality impact is provided for the public to review. The FEIS states:

> *"An estimate of the spillage of ore fines along the rail corridor is provided in Section 8.4.3 of the Waste Characterization Data Package (PolyMet 2015q). Assuming that all spillage of the coarse material would occur in a 2-meter-wide strip on both sides of the centerline of the railway (total width equals 4 meters) over the entire haul distance after loading (approximately 8 miles or 13,000 meters), results in approximately 0.11 kilograms per square meter (kg/m^2) of ore fines annually or 2.14 kg/m^2 for the 20-year NorthMet Project Proposed Action. This equates to 0.002 inch of depth annually or 0.05 inches for the 20-year NorthMet Project Proposed Action".* (FEIS page 5-313).

However, the above FEIS language is incorrect because PolyMet 2015q, Section 8.4.3 (page 101) actually says *"Assuming that all spillage occurs in a 2 meter wide strip along this portion of the rail corridor, it is estimated that approximately 2.78 kg/m^2 could spill annually or 55.7 kg/m^2 over the life of the Project. This is equivalent to 1.25 inches of spilled material over a 2,000 m^2 area".* The values of "total width = 4 meters", "0.11 kg/m^2", "2.14 kg/m^2", "0.002 inch of depth annually" and "0.05 inches deposited for the 20-year Project" mentioned in the FEIS actually come from a different document - PolyMet 2015b (page 57, Section 5.2.3.2.1). These numbers also appear in Attachment D to PolyMet 2015b, which is a 2012 memo from Barr Engineering (PolyMet 2015b, page 259/273).

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[75] FEIS, 4-23.
[76] *Id.*
[77] MPCA, Groundwater Profile Arrowhead Region, *available at* http://www.pca.state.mn.us/index.php/view-document.html?gid=6482 (last visited December 11, 2014).

There are three issues that arise from the above discussion. First, the FEIS incorrectly references its estimated deposition values. Second, there has been no discussion of the differences between what is stated in PolyMet 2015b and PolyMet 2015q, nor any discussion of why the lower overall numbers from the older document (the Barr memo from PolyMet 2015b was dated December, 2012, while PolyMet 2015q is dated February, 2015) were chosen for inclusion in the FEIS. Third, there has been no discussion of the fact that there will be **55.7 kg/m^2 of potentially reactive dust** deposited near the rail line over the estimated life of the mine. The FEIS does not include this number at all.

This is not a trifling mass of ore, nor is it an insignificant quantity of reactive dust and fines, deposited directly into the watershed. It is unacceptable to dismiss the ***likely*** water quality impacts of twenty years of ore spillage and dust/fine deposition with a casual statement and incomplete, inconsistant analysis. For example, PolyMet 2015b, Attachment D, used the GoldSim model to estimate water quality resulting from the mixture of spilled ore with precipitation, and included a number of graphs showing the predicted values and also showing that water quality standards will be exceeded for four pollutants. PolyMet 2015q (page 101) even states that "Preliminary modeling using the geochemical inputs discussed in this section for the spilled ore suggests that the rainfall contacting spilled ore material has the potential to exceed surface and groundwater quality standards at the source i.e., including only rainfall over the 2,000 m^2 area and no other dilution" and also states that "Nonetheless, impacts to surface and groundwater from rail car spillage cannot be dismissed (page 101)" but does not seek to further quantify, graph, or even to list the pollutants of concern. The FEIS attempts to gloss the issue over by merely stating that "Rainfall contacting the spilled ore would have the potential to release contaminants, but the relatively small volume of material and dilution from other sources are expected to results in surface water quality meeting the evaluation criteria (PolyMet 2015q)".[78]

It is especially disheartening to the tribal cooperating agencies that have attempted to elevate this issue for so many years, that the Co-leads have been completely unwilling to consider giving it the analysis it requires, or to even provide examples from other sulfide mines where this has ***not*** proven to be a concern.[79] At best, the analysis provided is messy and confusing. At worst, it is an attempt to mislead the public into believing that there will be few impacts from ore spillage. And, unfortunately, as this would be considered a nonpoint pollutant source, the MPCA would not be controlling it through an NPDES permit. This reasonably foreseeable water quality impact must be clearly recognized and evaluated in the FEIS, so that robust monitoring and *some* measures of control or response can be applied in an enforceable manner through the MnDNR Permit to Mine.

Finally, the Band raises concerns about potentially significant underestimation of groundwater contamination from the equalization basins at the WWTF. The FEIS states:

> *The WWTF would treat influent water from a variety of sources (e.g., pit dewatering, stockpile leachate collection, contact surface water). The only potential source of groundwater contamination at the WWTF would be influent leaking from the two equalization basins and effluent leaking from the Central Pumping Station. The*

[78] FEIS 5-164.

[79] *See, e.g.,* "Fugitive Dust Risk Management Plan 2012 Annual Report", Teck Alaska Inc., March 2013, *available at* http://www.reddogalaska.com/DocumentViewer.aspx?elementId=209271&portalName=tc.

> *equalization basin would have a geomembrane liner system and would be designed to have a minimum of 3 feet of freeboard, in accordance with the MPCA guidance (Meyer et al. 2009). Leakage from these basins through the liner system is calculated differently than for the waste rock stockpile liner systems in that these systems are intended to store water and do not have positive drainage. Therefore, the hydraulic pressure on the liners would be greater, and, in turn, more water would be expected to leak on a per-acre basis (i.e.,* ***approximately 5 gallons per acre per day****) (PolyMet 2013i). The total volume of leakage from the equalization basins, however, would be less than from the stockpiles, as the footprint of the equalization basins would be much less. This leakage would reach the groundwater table and follow what is referred to as the WWTF Flowpath ultimately to the Partridge River.*[80]

Regardless of the 'footprint' of the equalization basins, the liner leakage estimate of 5 gallons per acre per day (gpad) is not consistent with what we have found in the literature for the maximum allowable, or "Action Leak Rate", above which a leak must be found and repaired. US EPA terms this the 'de minimis' leak flow rate, which for a reference evaporation pond 70 acres in area and with an average depth of 30 feet is 28 gpad , or a total of 840 gallons per day for a 0.040-inch thick HDPE geomembrane.[81] The Band was unable to find detailed designs for the equalization basins in either the Adaptive Water Management Plan or the Water Management Plan – Mine (PolyMet 2013i), to determine the size of the basins or specifications for the proposed geomembrane liner system, but it is fundamentally understood that all liners leak. Some liners are damaged during installation, but most damage occurs when the liner is covered by drainage or protective soil.[82] The relevance to water quality predictions is again linked to model inputs. The west equalization basin receives highly contaminated process water from stockpile liner drainage, OSP liner and reject concentrate (brine) from the WWTP, all with high levels of sulfate and metals. The east equalization basin receives drainage from the haul roads, the RTH, pit dewatering and the Category 1 Waste Rock Stockpile drainage, with relatively lower sulfate and metals concentrations but still requiring ultrafiltration/nanofiltration.[83] If a substantially higher (and more realistic) rate of concentrated contaminant leakage to groundwater is incorporated into the mine site water model, it would likely result in significantly different water quality model predictions.

C. Inadequate analysis of Project mercury Impacts.

Mercury is a potent neurotoxin, with the primary human and wildlife route of exposure through consumption of fish. The Embarrass River, Wyman Creek, Whiteface Reservoir, Stony Creek, West Two River, numerous lakes, and the entire St. Louis River all have fish consumption advisories in place for recreational fishing. These advisories do not consider subsistence fishing. Mercury concentrations in

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[80] FEIS 5-124.

[81] *Geomembrane Liner Action Leakage Rates: What is Practical and What is Not*?, Ian D. Peggs, Land and Water, July/August 2009 p. 47.

[82] Nosko et al, 1996. "SENSOR Damage Detection System (DDS) – The Unique Geomembrane Testing Method", Proceedings of the First European Geosynthetics Conference, Rotterdam,The Netherlands, pp743-748.

[83] NorthMet Project Description v. 5, March 2013, p. 42.

fish from these impaired waters will require additional load reductions beyond the emissions reductions required by the statewide mercury TMDL.

Mercury levels in Lake Superior lake trout remain higher than the other Great Lakes, despite significant reductions in the amount of mercury being released from sources around the lake. The largest source of mercury from within the Lake Superior basin is the mining sector, at 63% of total emissions.[84] There has not been significant "ground-truthing" of mercury deposition rates that were used in the modeling assessment. Tribal cooperating agencies note that no studies have been conducted within this region of active mining to determine why fish tissue mercury concentrations are so high if the local sources mainly emit 'non-locally polluting' forms of mercury.

A 2011 Minnesota Department of Health study[85] of infants in the Lake Superior basin found that 1 in 10 infants are born with unsafe mercury levels in blood. Blood spot mercury concentrations in infants from Minnesota were significantly higher than infants born in the Lake Superior basin in Wisconsin and Michigan.

The Band has consistently raised concerns *and* supported our opinion that the NorthMet Project will increase mercury concentrations in fish within the St. Louis River watershed[86], where we exercise water quality jurisdiction, and within the 1854 Ceded Territory where Band members can exercise treaty fishing rights.[87] We concur with the comments provided by Dr. Sara Moses of GLIFWC in the Preliminary FEIS Extended Comment Form, submitted August 11, 2015,[88] summarized as:

> *We disagree with the treatment of mercury in the PFEIS and the resulting conclusions in three fundamental ways. In contrast to what is laid out in the PFEIS, it is our expert opinion that:*
>
> *I. Increased mercury loadings to the Embarrass River may not be permittable. A net decrease in mercury loadings to the St. Louis River does not justify or make acceptable the increased mercury loadings to Embarrass River.*
>
> *II. The mass balance analyses that lead to the conclusion that mercury loadings will not increase in the St. Louis River are flawed in numerous ways. Mercury loadings to the St. Louis River are in fact likely to increase as a result of the NorthMet Project.*
>
> *III. While mercury loadings to the Partridge, Embarrass, and St. Louis Rivers are discussed, there is no adequate consideration of the fact that more of the mercury entering these systems will be in the form of methyl, rather than inorganic, mercury.*

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[84] Lake Superior Lakewide Management Plan Annual Report 2012, Catalogue No.: En161-9/2012E-PDF.
[85] McCann, P. (2011). *Mercury Levels in Blood from Newborns in the Lake Superior Basin* (Minnesota Department of Health: Environmental Health, pp. 181).
[86] *See* Fond du Lac comments on CPDEIS, DEIS, SDEIS, PFEIS.
[87] *See* Band plans to spear walleyes in the treaty area, March 7, 2014, *available at* http://www.duluthnewstribune.com/event/article/id/293320/group/Outdoors/; See also Fond du Lac comments on CPDEIS, DEIS, SDEIS, PFEIS.
[88] GLIFWC Mercury Comments on the "NorthMet Mining Project and Land Exchange: Preliminary Final Environmental Impact Statement (June 2015)".

This has the potential to greatly impact fish tissue mercury in these systems and the subsequent risk to fish consumers, both human and wildlife.

Fond du Lac, GLIFWC, and others commented extensively on the inadequacy of the analysis of mercury effects, but the Co-lead agencies "responses" were non-responsive; i.e., there has been no improvement or clarity in the FEIS on these substantive criticisms. The Project cannot be permitted, as it would contribute to an existing water quality impairment for which there is no approved TMDL. And once again, the flawed hydrologic model renders the FEIS mass balance approach untenable; by definition, a mass balance model requires accurate flow and concentration data. Additionally, from the GLIFWC extended comments on the PFEIS (August 2015), we highlight another inappropriate use of analog data:

1. *The mine site mass balance and estimates of mercury concentrations in the West Pit are supported by data presented in the PFEIS for analog lakes. The data (PFEIS Table 5.2.2-49) shows average mercury concentrations of 0.66 and 0.97 ng/L for analog natural seepage lakes and pit lakes, respectively. The more detailed source data for this summary table can be seen in Section 6.6 of the PFEIS reference "PolyMet 2015m." At least 6 of the 26 analog lakes had individual samples over the GLI standard of 1.3ng/L, and two lakes had average concentrations above 1.3ng/L. Further, data collected by the Fond du Lac Band [available upon request] on total mercury in concentrations in seepage lakes on or near the Fond du Lac reservation between 2011 and 2014 suggest that levels may be much higher in analog natural seepage lakes closer to the proposed Project, than those presented in the FEIS which were further away in Voyagers National Park and sampled over a decade ago. For the 27 lakes sampled by the Fond du Lac Band, 22 had individual samples over the 1.3ng/L GLI standard, and 20 had mean concentrations exceeding 1.3ng/L. Of the 59 samples collected and analyzed from these lakes, 36 (61%) exceeded 1.3ng/L. This suggests that the analog lakes chosen for analysis in the PFEIS are not representative of area lakes and underestimate the predicted West Pit mercury concentration. It is likely that the mercury concentration in the West Pit will exceed the GLI standard.*

Despite years of raising concerns for mercury mobilization and increased methylmercury release from excavated peat soils at the Overburden Storage and Laydown Area (OSLA), this mercury source is completely missing from FEIS Fig. 3.2-12 (Water Management Schematic – Initial Years of Operations – Approximately Years 1-11). A significant portion of the pulse of mercury released to the surrounding environment will neither be contained nor captured; rather, it will flow unabated through surficial till to the Partridge River and contribute to existing mercury impairments in fish and water. Table 5.2.2-27 indicates that the groundwater flow rate from the OSLA would be 14 gpm. Further, the FEIS does not evaluate the effect of peat overburden storage on methylmercury formation, through recurring wetting and drying cycles that not only release stored mercury, but also regenerate sulfate[89] and promote

[89] Coleman Wasik, J. K., D. R. Engstrom, C. P. J. Mitchell, E. B. Swain, B. A. Monson, S. J. Balogh, J. D. Jeremiason, B. A. Branfireun, R. K. Kolka, and J. E. Almendinger (2015), *The effects of hydrologic fluctuation and sulfate regeneration on mercury cycling in an experimental peatland*, J. Geophys. Res. Biogeosci., 120, doi:10.1002/2015JG002993.

mercury methylation. This recurring deficiency in the Project mercury mass balance is unacceptable.

The FEIS also assumes that existing tailings in the LTV Tailings Basin will indefinitely adsorb mercury. However, the data in Tables 4.2.2-23, 4.2.2-24 and 4.2.2-35 clearly demonstrate that existing seepage mercury concentrations exceed the GLI standard, and are higher than many of the data shown for most of the tributary streams. Coupled with the lack of confidence in predicted seepage capture rates, Tailings Basin seepage is another source loading that has been greatly underestimated in the FEIS analysis.

The Band has repeatedly elevated our concerns for the Proposed Project's ability to be implemented with sufficient environmental controls to meet our downstream Water Quality Standards, both our narrative and nutrient criteria and our antidegradation policy.[90] The St. Louis River is the most significant and utilized fishery resource on the reservation, even though fish tissue collected by the Band in 2001 and 2008 showed mercury concentrations that exceed human health risk levels and required advisories that recommended limited consumption of traditional preferred species. Although the Band has concurred with the MPCA for the past six biennial §303(d) listing cycles on this particular impairment in our shared waters of the St. Louis River, there is currently no TMDL in place to require mercury reductions sufficient to lift the consumption advisories. Additional water quality data collected by the Band also demonstrates consistent exceedances of our more restrictive chronic criterion (0.77 ng/l).

> *All NorthMet Project area waters are also designated Outstanding International Resource Waters (Minnesota Rules, parts 7050.0460 and 7052.0300), which prohibits any new or expanded point source discharges of bioaccumulative substances of immediate concern (i.e., mercury) unless a nondegradation demonstration is completed and approved by the MPCA.*[91]

The FEIS states that the current fish tissue concentrations in the five local lakes that were studied result in Hazard Quotients (HQs) that exceed 1,[92] but gives no further interpretation in the text of the document. The *Cumulative Impacts Analysis, Local Mercury Deposition and Bioaccumulation in Fish (July 2012)* (Barr report) provides the actual HQs for these local lakes. While Table 6.2.6-1 of the FEIS does contain these values, they are not pointed out in the text or expanded upon. The highest HQ is 46.2, ***46 times the health-based target***. It is difficult to understand why, despite repeated requests by the tribes, no further discussion is provided of a HQ that exceeds a health-based target by such a large number. The report also ignores the fact that the HQ of 46.2 is for tribal anglers, whereas the highest HQ value for recreational anglers is much lower, at 6.2. This is very obviously an issue of environmental justice, but the FEIS completely ignores issue this other than by saying "Note that the current fish tissue concentration in the five lakes results in Hazard Quotients that exceed 1, leading to the need for the fish consumption advisories currently in effect".[93]

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[90] FEIS 5-20.
[91] FEIS 4-24.
[92] FEIS 6-86.
[93] *Id.*

The Barr report also states that "the existing health risk under Scenario 1 and 2 to subsistence/tribal and subsistence anglers eating three pounds or more per week of fish from these lakes would be significantly higher – up to fifteen times the EPA assumed safe risk intake level for a pregnant mother or child under the age of 15". While the incremental risk from the Project may be small, the existing risk is large and has not yet been addressed through a total maximum daily load (TMDL) or other reduction program. Figure 9 from the July 2012 Barr report should be included to give the public a clear idea of the existing condition of the local waters and why the tribes believe that no additional mercury should be added at this time. The FEIS does not provide any rationale for more mercury to be added to a system that is already so high in mercury, but rather only suggests that the TMDL should take care of this.[94] The Band does not believe this will be the case.

The FEIS states:

> *Overall, the NorthMet Project Proposed Action is predicted to increase mercury loadings in the Embarrass River. Mercury loadings in the Partridge River would decrease. The net effect of these changes would be an overall reduction in mercury loadings to the downstream St. Louis River upstream of the Fond du Lac Reservation boundary. Therefore the NorthMet Project Proposed Action would not add to any potential exceedance of the Fond du Lac mercury water quality standard of 0.77 ng/l within the Reservation.* [95]

This conclusion is not supported by data. The background site-specific analyses and data presented in the FEIS for total mercury and methylmercury in surface and groundwater is not sufficient to either adequately describe existing conditions or evaluate the potential for impact due to changes in hydrology and water quality as a result of the NorthMet Proposed Project. There is very little methylmercury data included in the analysis for any waterbodies, and there is *no* sediment mercury or methylmercury data used to evaluate and understanding existing conditions. For the data that is presented, there are numerous inconsistencies in reporting limits and method detection limits, casting doubt on data quality and its utility for critical analysis of Project impacts.

Dr. Brian Branfireun, an internationally recognized expert in the fields of watershed hydrology, biogeochemistry and the environmental cycling of mercury, provided his opinion the NorthMet Project[96] on problematic background data, including:

- Data in Table 4.2.2-14 (Partridge River) is questionable; too many non-detects for total mercury, but even with the questionable non-detect results, the maximum result is quite elevated, with an increasing trend in mean concentrations moving downstream. New methylmercury data has errors calling QA/QC into question.
- Data in Table 4.2.2-32 (from Barr 2014d), has too many non-detects, with inconsistent detection limit for that used in Partridge River data; range of concentrations has no upper bound.

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[94] *Id.*

[95] FEIS 5-10.

[96] Branfireun, B., *Expert Review of the NorthMet Mining Project and Land Exchange Final Environmental Impact Statement* (December 2, 2015), prepared for Paula Maccabee, Counsel/Advocacy Director for WaterLegacy.

- The FEIS approach for dealing with non-detect data is not scientifically supported.

He also noted that the reported high proportion of total mercury as methylmercury is indicative of a strongly methylating environment. This percentage can be interpreted as an indicator of the efficiency with which a sediment or landscape can methylate inorganic mercury.

- % methylmercury (MeHg) in Partridge River increases from 2.2% at SW-001 to 14.6% at SW-004a and remains ~10% downstream; any percentage over 3% MeHg is clear evidence of net MeHg production in the watershed.
- %MeHg in Embarrass River, if one accepts the questionable range, is 10.4% and 8.8%.
- Upstream tributaries are also draining a landscape of high mercury methylation potential; associated with high percentage of wetland land cover, especially ombrotrophic bogs and peatlands.
- Project area watersheds are highly sensitive to both hydrologic impacts (changes in surface or subsurface hydrology) and any additional sulfate deposition (from water or atmospheric deposition).

Other comments on data quality included inconsistencies between newly added source data and the FEIS (Table 4.2.2-15), and continued confusion about detection levels. He notes the failure of the FEIS to conform to standard approaches for data collection and presentation, and states that "The FEIS presentation of arithmetic means and ranges precludes any assessment of explanatory power in the data set, biases the interpretation of changes in loads, and cannot be used to satisfy any analyses of appropriate sample size."

The FEIS also fails to evaluate other scientifically documented factors that affect mercury methylation and bioaccumulation. The FEIS approach to evaluating mercury impacts of the Proposed Project avoids addressing complex but well-studied environmental processes by modeling,[97] and instead relies upon an incomplete mercury mass balance to predict future conditions. It superficially references some of the large body of literature related to sulfate, pH, dissolved organic carbon, iron, and microbial activity, but in some cases erroneously interprets it. Research in northern Minnesota peatlands by Jeremiason, Swain and others has clearly demonstrated the enhancement of mercury methylation by sulfate.[98] It considers sediments in downstream waterbodies to be exclusively 'sinks' for mercury, rather than recognizing that these sediments are also active sources of mercury in the ecosystem.

The FEIS acknowledges the need to incorporate Project design elements to reduce sulfate losses to both surface and groundwater pathways,[99] but the presumed seepage capture rates and unspecified treatment technology do not provide enough support to conclude that the proposed mitigation would be effective. The small tributaries near the mine site are clearly sulfate-limited; *any* increase in sulfate loading to the watersheds (either by direct discharge or additional atmospheric deposition) will increase net methylmercury production. The FEIS is inconsistent in its discussion of the sulfate/mercury

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[97] FEIS 5-462.

[98] Jeremiason, J.D, D.R. Engstrom, E.B. Swain, E.A. Nater, B. M. Johnson, J.E. Almendinger, B. A. Monson, and R. K. Kolka, *Sulfate Addition Increases Methylmercury Production in an Experimental Wetland,* Environ. Sci. Technol. 2006, *40*, 3800-3806.

[99] FEIS 5-232.

methylation relationship; in FEIS 5-21 that relationship is "only partially understood", while FEIS 5-313 cites Jeremiason et al (2006) in recognizing that even small increases of sulfate to sulfate-poor wetlands can increase mercury methylation.

Branfireun questions other FEIS conclusions about the methylating environment,[100] and states: "As a scientist who has spent my career studying methylmercury, I am troubled that the FEIS argues that there is insufficient scientific knowledge to develop a mechanistic model to evaluate the risk to surface waters from enhanced methylation in the impacted watershed, yet is comfortable speculating about the future geochemical environment in a flooded pit 55 years from now in order to dismiss the potential for enhanced methylation" (in the West Pit). He notes the failure of the FEIS to adequately consider the scope of impacts the Project would have due to changes in hydrology, arguably one of the most significant impacts relevant to increased mercury methylation and mobilization. Further, he argues that a mass balance model *cannot* by definition incorporate mechanistically the input and removal processes for mercury, and *cannot* address the biogechemical aspects of mercury methylation across the landscape, **which are at the root of the potential impacts associated with the PolyMet proposal** (emphasis added).

In his discussion regarding the MPCA's Mercury Risk Estimation Method (MMREM), Branfireun refutes the assumption of proportionality between mercury deposition and mercury in fish. He considers it an 'archaic approach' which "does not reflect current scientific through or the best available tools." He cautions that "without knowledge concerning the hydrological interactions between surface waters and the watershed, predictions about the dominant source(s) of mercury to biota are not possible. By focusing on this inappropriate method of predicting Project mercury impacts,

> *the FEIS "obfuscate(s) the fact that the real concern with the NorthMet development, in my opinion, is not an appreciable increase in local atmospheric deposition of mercury to lakes, but its changes to the hydrology of watersheds, subwatersheds and their surface streams and rivers that are proximal to the propose mine and tailings site. These hydrological changes will increase the methylmercury production potential of the landscape, and ultimately engender downstream impacts on the St. Louis River.*

This conclusion itself should be a clear and compelling argument against the §404 permit and the §401 certification for the NorthMet Project. To further connect the technical flaws the Band has identified in the FEIS to Project mercury impact predictions, Branfireun clearly established the correlation between wetland drawdown and enhanced mercury methylation. Project changes to the natural hydrology of the mine site and at the tailings basin will amplify drought-rewetting cycles, and:

> *...independent of any additional releases of sulfate or mercury from the proposed NorthMet development, dewatering of wetlands surrounding the tailings basin through seepage collection and even modest impacts on water table position by underdrainage of mine site peatlands through open pit dewatering could increase total mercury, methylmercury and sulfate in the Partridge, Embarrass and ultimately the St. Louis River.*

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[100] *Id.*

Branfireun also provides a clear analysis of Project sulfate deposition impacts, demonstrating that the atmospheric sulfate loading from the Project would be nearly 4X the background sulfate deposition. The experimental wetland research conducted by Jeremiason and Coleman-Wasik showed significant increases in pore water methylmercury, methylmercury export and sulfate regeneration at enrichment levels equivalent to the Project's potential increase in deposition. Consequently:

> *The potential near-doubling of methylmercury export from methylating peatlands receiving an additional sulfate load from the proposed PolyMet development would be reflected in methylmercury concentrations in the upper tributaries, and the Embarrass and Partridge Rivers, given the role these wetlands play in supplying water to these streams and rivers. Increased methylmercury would also be expected to impact the Upper St. Louis River…*

In his concluding statement, Branfireun completely disputes the FEIS conclusion that the proposed NorthMet Project would not increase risks of methylmercury production and transport in the Partridge and Embarrass River watersheds, and that:

> *It is my opinion that the NorthMet development could create a substantial risk of ecologically significant increase in water column and fish methylmercury concentrations in downstream waters, including the St. Louis River. Finally even if appropriate monitoring for biogeochemical changes in wetlands and sediments near the development were to be designed and implemented (a difficult and complex undertaking requiring collection of baseline data not supplied in the FEIS), it is highly likely that lag times for expression of methylmercury increases, multiple mechanisms of transport, and the likelihood of legacy regeneration of sulfate stored in the watershed would preclude effective adaptive management prior to irreversible impairment of downstream waters.*

The FEIS evaluation of mercury impacts is exceptionally deficient, and the conclusion of 'no mercury impacts' downstream in the St. Louis River watershed is not supported by the information presented. Our analysis and the expert opinions of mercury researchers conclude that **the FEIS approach is not scientifically defensible, and the NorthMet Project is likely to result in significant and long-lasting downstream mercury impacts to aquatic life, wildlife and human health.** Furthermore, the Band would bring attention to the alarming lack of regulatory controls for the very processes that will most likely contribute to the identified mercury impacts, with the sole exception of the §404 permit and connected §401 certification.

D. Long-term treatment of contaminated water; consistency with maintenance-free closure goals.

The FEIS lists the sulfur concentrations of Project waste rock ranging between 0.01 - 5.0% [101] with an average mass-weighted concentration of 0.15%. The Virginia Formation (exposed in the north wall of the East Pit) has the highest concentrations of sulfur at 0.4 - 5.0%, and the Duluth Complex 0.13 – 0.6%

[101] FEIS 5-6, 5-60.

sulfur. These concentrations are at least equal to, or in some instances significantly higher than the Zortman-Landusky mine waste rock (0.2% sulfur)[102] that requires perpetual wastewater treatment. Just as Zortman-Landusky predicted for their mine project, PolyMet has suggested that "most (70%) of the NorthMet waste rock would be the low-sulfur, non-acid-generating" and will never cause acid mine drainage.

It is clear that the NorthMet Project Proposed Action would require long term treatment of water at both the Plant and Mine Sites. The minimum duration of this treatment is on the order of centuries, but the FEIS does not provide an estimate of when mechanical treatment would no longer be needed to meet MN WQS. Therefore, as provided in multiple comments on the preliminary SDEIS, Fond du Lac conservatively assumes that water treatment for the proposed PolyMet mine is perpetual **and the FEIS should be clear on this issue**.

The FEIS states:

> ***Mine Site**: "Once the West Pit is full (approximately year 40), discharge of treated water from the WWTF to the West Pit would be terminated. The WWTF would be upgraded to RO and include evaporator/crystalizers to convert the RO reject concentrate to residual solids, which would be disposed of at appropriate off-site facilities."...Based on current GoldSim P90 model predictions, treatment activities could be required for a minimum of 200 years at the Mine Site..."*[103]
>
> *After the West Pit is refilled, water level would be controlled by pumping to the WWTF to prevent surface water overflow from the pit lake. However, release of pit lake water to the West Pit Surficial Flowpath would continue. The WWTF would also receive low flow rates from the Category 1 Stockpile groundwater containment that would then be discharged to the West Pit Overflow Creek shown on Figure 5.2.2-22.*
>
> *The WWTF would continue to operate during long-term closure, treating excess water from the West Pit and discharging the effluent to the West Pit Overflow Creek. The typical discharge rate from the WWTF is predicted to be about 300 gpm. The water balance model predicts **periodic temporary higher treatment/discharge rates (up to about 600 gpm) to create additional freeboard prior to spring snowmelt.** By pumping pit lake water to the WWTF, the pit water level would be managed to always provide sufficient freeboard to absorb extreme precipitation events without overflowing.* [104]
>
> *Containment systems would continue to operate, although seepage rates would be progressively reduced. The collected seepage would be pumped to the WWTP. During this period, the WWTP effluent would be used for both West Pit flooding and stream augmentation (PolyMet 2015a).*

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[102] US EPA Office of Solid Waste and Emergency Response, Financial Assurance for Hardrock Mine Cleanup, March 2007.
[103] FEIS 3.2.2.1.10, Reclamation and Long-term Closure Management.
[104] FEIS 5-105, Closure and Post-Closure Maintenance (after Reclamation is Complete).

> *The WWTP and the containment system would be periodically inspected to ensure continuing integrity. Monitoring of the piezometers or other similar devices would continue for the purpose of assessing the continued effectiveness of the containment system and to inform appropriate mitigation and/or permitting of any potential release of seepage that may bypass the containment system. An NPDES permit would be required for any point source water discharge that adds pollutants to waters of the United States.*[105]
>
> ***Plant Site**: Surface water currently seeps at a rate of approximately 227 gpm from the existing LTVSMC Tailings Basin to the headwaters of Second Creek. This seepage is currently partially blocked by a cutoff berm and trench and collected in a sump and pumped back to the Tailings Basin pond. Under the NorthMet Project Proposed Action, this seepage is predicted to continue during mine operations (550 gpm), reclamation, and closure and long-term maintenance (80 gpm). The NorthMet Project Proposed Action would install an engineered containment system south of the Tailings Basin designed to ensure that 100 percent of the seepage is captured during operations and closure and post-closure maintenance, this seepage would continue to be pumped to either the Tailings Basin pond or the WWTP. To mitigate the reduction of flow to Second Creek, under the NorthMet Project Proposed Action, WWTP effluent would be used to augment flow to Second Creek in closure at a minimum flow rate equal to about 80 percent of the uncaptured flow rate (or about 184 gpm). Since the effluent from the WWTP is designed to meet surface water quality standards, this discharge is not expected to cause any exceedance of water quality evaluation criteria.*[106]
>
> *During operations, reclamation, and closure and post-closure maintenance there would be continuous augmentation at the Plant Site to Second Creek, which is a tributary of the Partridge River.*[107]

These statements indicate the need for perpetual WWTP operation, if for no other reason than needing clean water for stream augmentation, which will be required in perpetuity to compensate for the hydrologic impacts of the Tailings Basin.

However, instead of clarifying this factor, it appears that the Co-lead agencies are attempting to minimize the significance of the necessity for long term/perpetual treatment by repetitively using vague and confusing language in the FEIS. The specific language describing long term water treatment has changed during the development of the document, even though the model results have not. The Co-lead agencies use creative wording to obscure the results of the modeling; this is misdirection at best and highly inappropriate for the Co-lead agencies to present to the public.

In addition to water treatment, there will also need to be a substantial investment in long-term or perpetual operation, maintenance and replacement of other environmental controls for the Project,

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[105] FEIS 5-104.
[106] FEIS 5-172.
[107] FEIS 5-142, 143.

including seepage capture and pumping at multiple locations at both the mine site and plant site, repair and replacement of liners, managing appropriate stream augmentation and Tailings Basin pond elevation, and pumping, treating, and disposal of seepage from the HRF:

> *The rate of drainage would decrease over time as the pore water within the hydrometallurgical residue is collected and removed. Once the entire facility is closed, the volume of water from the drainage collection systems would decline. In the long term, the volume of water requiring treatment would decline to the point that the* ***remaining reclamation activity may consist of periodic pumping of remaining drainage into tank trucks for transportation, treatment, and disposal, as appropriate, and of inspection of the closed cells to verify integrity of the reclamation systems.***[108]

> *…The water quality of both mine pits, however, is predicted to improve over time as the pits become flooded, thereby effectively eliminating oxidation of the pit walls, the primary source of solutes, except for the upper few feet where water levels may fluctuate. Figures 5.2.2-41, 5.2.2-42, and 5.2.2-43 show how the water quality in the West Pit is predicted to improve over time for three representative solutes: cobalt, nickel, and sulfate.* ***It is expected that eventually the solute concentrations in the pits would stabilize to more or less steady-state values, although the timeframe for this would likely be greater than 200 years*** *as indicated by Figures 5.2.2-41 to 5.2.2-43, which show solute concentrations continuing to decrease at year 200, although* ***still above the evaluation criterion****. These predicted improvements in water quality suggest that the WWTF may not need to operate permanently, but that at some point, non-mechanical treatment systems may be sufficient to meet water quality based effluent limits.*[109]

The FEIS frequently states the long-term goal is to transition to non-mechanical treatment, but there is little evidence to suggest that current treatment technologies can consistently treat large volumes of water to meet WQS. Furthermore, constructed wetlands would require substantial acreage to handle the volume of wastewater that will perpetually be collected, and do not function well in our cold climate for at least half of the year (when vegetation is not actively growing).[110] They are not likely to be able to treat wastewater sufficiently to consistently meet water quality standards, including the wild rice sulfate criterion.[111] Given the absence of scientific or evidentiary support, it is irresponsible for the FEIS to sustain the myth that long-term water quality maintenance at the Project area can *ever* transition to non-mechanical treatment.

However, the true legacy of this Project, should it be permitted and operated, will be the unquantified volume and mass of contaminants that will be released to groundwater, ***untreated and in perpetuity,*** in both the Partridge and Embarrass River watersheds (and ultimately the St. Louis River), and to the north (and ultimately the BWCAW). Some of this contaminated groundwater will 'daylight' to surface water

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[108] FEIS 3-134.
[109] FEIS 5-174.
[110] *See* http://www.itrcweb.org/miningwaste-guidance/cs_dunka_mine.htm, Case Study as part of a Web-based Technical and Regulatory Guidance, Dunka Mine Minnesota.
[111] *Id.*

features, including streams and wetlands, and will result in unacceptable hazard to aquatic species and wildlife dependent upon these waters. This is not conjecture; existing ferrous mines have *already* adversely impacted surface and groundwater resources (private drinking water wells near the tailings basin; aquatic life use impairments identified in the final MPCA 2012 303(d) list) from what the regulatory agencies consider relatively 'benign' ore bodies and the customary permitted mining practices (i.e., storage of waste rock, "leaky" unlined tailings dumps). Contaminant loads from even this low-grade, disseminated sulfide ore will be significantly more toxic than the releases that Minnesota waters have received over the past century of ferrous mining. Furthermore, peak concentrations in this contaminated groundwater won't reach surface waters until many decades after closure. There is no analysis in the FEIS that acknowledges, let alone addresses, the perpetual and uncontrolled release of highly contaminated groundwater, affecting water resources far beyond the Project boundary.

The FEIS requires substantially more public transparency and less equivocation on what is arguably one of the most fundamental issues at stake for this Project: how long will the company be required to flawlessly operate and maintain expensive mechanical treatment to comply with MN WQS? Clearly there are other engineering controls and management actions that will also have to operate faultlessly and that will require maintenance in perpetuity (seepage collection, liners, pumps, waste rock stockpile cover systems, waste disposal, stream augmentation, Tailings Basin pond elevation management). This singular issue has significant repercussions for the public interest determinations and the scale of required financial assurance.

E. Absence of a clear discussion on PolyMet's liabilities for legacy contamination.

The tribal cooperating agencies have repeatedly requested a clear answer to our question regarding remedial action requirements for the legacy contamination at the portion of the former LTV site that PolyMet has acquired and proposed to use for their processing operations. While the Co-lead agencies stipulate in the FEIS that PolyMet will bear liability through financial assurance, it is troubling to see that apparently, they will not be required to complete remedial activities until closure, many decades from now:

> *All historic and any potentially operational AOCs not already addressed by the start of mine closure would be investigated and remediated as necessary. The MDNR has indicated that any associated cleanup costs for the legacy AOCs would be included in the financial assurance requirements for any Permit to Mine issued to PolyMet for the NorthMet Project Proposed Action (Watkins, Pers. Comm., April 13, 2009).*[112]

The FEIS identifies 29 Areas of Concern (AOCs) that are now PolyMet's legal responsibility, but still does not provide the necessary clarity about the status of remedial investigations and/or actions necessary to clean up the contamination that occurred over decades of taconite mining and processing.

> *PolyMet became responsible for 29 AOCs (see legacy contamination, Section 4.2.1.4.2). Of these, six have already been closed or have received a No Further Action letter from*

[112] FEIS 4.2.1.4.2 Legacy Contamination.

> *the MPCA (see Table 4.2.1-2).* ***Additional investigation would be required to determine whether the remaining AOCs require further action****. The NorthMet Project Proposed Action offers no direct resolution for the 33 AOCs that are designated as the responsibility of parties other than PolyMet (see Table 4.2.1-2). The MPCA VIC program would be utilized to facilitate and oversee remediation activity for any remaining potential historical releases on the 29 AOCs under the NorthMet Project Proposed Action.*[113]

In particular, some of the AOCs identified as PolyMet's responsibility are key components in their NorthMet Project Proposed Action:

> *The former LTVSMC Area 1 Shop is an existing fully enclosed maintenance facility built specifically to handle maintenance and repair work on large mining equipment….*
>
> *The former LTVSMC Area 2 Shop, located about 7 miles west of the Mine Site, would be reactivated to provide office space for mining and railroad operations supervision and management, as well as change house facilities, toilets, lunch rooms, first aid facility, emergency response center and training, and meeting rooms for mining and railroad crews. The Area 2 Shop facilities would include the Locomotive Fueling Station, Locomotive Service Building, and Mine Reporting Building…*[114]

and

> *The NorthMet Project Proposed Action would utilize the existing general shop facility previously used by LTVSMC for re-fueling, routine inspection, and maintenance of locomotives and ore cars. Locomotives needing major repair would either be sent off site or repaired by a contractor in the general shop facility.*[115]

Despite repeated requests for a clear response from the Co-lead agencies, the tribal cooperating agencies still do not know what PolyMet will be required to do, or when they will be required to do it, regarding their legacy contamination liabilities. The FEIS does not provide sufficient information for the public to understand whether the NorthMet Project Proposed Action will be required to remediate these and other AOCs before commencing Project operations, or be allowed to defer remediation until closure. It is not clear in the FEIS how the Voluntary Investigation and Cleanup ("VIC") program requirements will be applied to PolyMet:

> "As per Minnesota statute, voluntary parties and their contractors who are not otherwise responsible parties do not incur liability for investigation (Minn. Stat. § 115B.17, subd. 14) or response actions (Minn. Stat. § 115B.175, subd. 1) as long as

[113] FEIS 5.2.1.2.3 Areas of Concern.
[114] FEIS 3.2.2.3.8 Required Process Services.
[115] FEIS 3.2.2.3.9 Transport of Consumables and Product.

> those actions are conducted in accordance with a work plan or response action plan reviewed and approved by the VIC Program."[116]

Cliffs Erie (now Cliffs Natural Resources) was party to a Consent Decree[117] and approved work plan(s) with MPCA regarding their remedial responsibilities, but there is little information in the FEIS for the public to be assured regarding the need for PolyMet to enter into a legally binding agreement and develop approvable work plans to address their responsibilities. We understand that PolyMet has been coordinating with Cliffs on the reissuance of the Tailings Basin NPDES permit (and variance too, apparently), and incorporating corrective actions in their Project design, but the FEIS is virtually silent on the other AOCs.

It seems reasonable to expect PolyMet to clean up *all* legacy contamination as quickly as possible; in fact, remedial actions should be integrated with the 'refurbishing' actions they plan to do to re-tool the taconite processing facilities to accommodate their processing needs. The FEIS should clearly acknowledge in its analysis of the No Action Alternative that, under the existing Consent Decree, Cliffs Natural Resources is required to complete remediation and reclamation/closure activities on the identified AOCs, and absent the NorthMet Mining Project, these requirements would not be deferred for 20 years. The Project Proponent has frequently touted the redevelopment of a 'brownfield site' as evidence of its environmental sensitivity, but the public may not realize that the actual cleanup of LTV's legacy contamination may be deferred until reclamation and closure of the NorthMet Project. In fact, four of the AOCs identified in Table 4.2.1-2 as PolyMet liabilities stipulate in the "status" column to "Further investigation **at PolyMet closure**." This timeline is not acceptable, and the FEIS should not be vague about the pace of fulfilling remedial requirements. **Instead, the Co-lead agencies should stipulate in the FEIS a clear requirement that PolyMet will provide an approved Work Plan and expedited remedial timeline for all 23 remaining AOCs on their property, as a condition of the DNR Permit to Mine.**

F. Inadequate analysis of Project impacts to wild rice.

The initial description of wild rice's preferred habitat and life cycle[118] is strangely silent on one of the most significant - and regulated - water quality parameters under evaluation for Project impacts: sulfate. The Co-lead agencies acknowledge that distribution and abundance of wild rice is dependent upon specific habitat requirements, including "Water chemistry – wild rice grows within a wide range of chemical parameters; however, productivity is highest in water with a pH of 6.0 to 8.0 and alkalinity greater than 40 mg/l "(FEIS 4-31). Yet there is no background or context provided for the section titled ***Regulations Applying to Waters that Contain Wild Rice.*** Minnesota's sulfate criterion for the protection of wild rice waters has been in approved state rules since 1973, and has been the subject of considerable controversy, legislative overreach, and accelerated experimental research throughout the entirety of the PolyMet environmental review process. The tribal cooperating agencies have, concurrently with our involvement as cooperating agencies for the EIS process, been engaged with the MPCA in consultation on the state's legislatively-directed water quality rules revision for wild rice

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[116] *See* http://www.pca.state.mn.us/index.php/view-document.html?gid=18603 (MPCA Brownfield Program Services).
[117] *See* MPCA v. Cliffs Erie Court File No. 62CV-IO-2807.
[118] FEIS 4.2.2.1.3.

waters. In fact, our very legitimate concern for new sulfate loadings to wild rice resources in the ceded territories originates with documented impacts from existing hard rock (ferrous) mining and patently inadequate regulatory oversight to protect this significant cultural and subsistence resource.

The Band has consistently challenged the conclusion that the NorthMet Project will not result in damage to wild rice waters in the Partridge and Embarrass Rivers and their watersheds. Our skepticism arises from growing knowledge of the extent to which state and federal regulatory agencies have consistently failed to enforce standards and regulations on the mining industry that are intended to protect wild rice. We have exhaustively commented on the specific threats of this Project from the very beginning of our involvement as a cooperating agency, and our previous concerns are carried forward to the FEIS, despite the inclusion of engineering controls and water treatment. It is commendable that PolyMet has committed to constructing wastewater treatment plants that include reverse osmosis, which has the potential to meet the low sulfate effluent limit if designed and operated properly, including at the Mine Site at year 1. But the damage to wild rice will be just as real and just as permanent if it results from inadequate regulatory controls, as if it results from inadequate engineering controls.

> *…To identify which of these waters within the NorthMet Project are were to be considered as water used for production of wild rice to which the current 10 mg/l wild rice sulfate water quality standard applies, MPCA had previously developed a draft staff recommendation (MPCA 2012b) that specified the following waters:*
> • *Embarrass Lake;*
> • *The northernmost tip of Wynne Lake (Embarrass River inlet);*
> • *The segment of the Embarrass River from MN Highway 135 bridge to the inlet of Sabin Lake;*
> • *The portion of Upper Partridge River from river mile approximately 22 just upstream of the railroad bridge near Allen Junction to the inlet to Colby Lake,*
> • *The portion of Lower Partridge River from the outlet of Colby Lake to its confluence with the St. Louis River, and;*
> • *The portion of Second Creek from First Creek to the confluence with Partridge River.*[119]

The MPCA and DNR both understand that natural stands of wild rice exhibit variable population and productivity cycles, are extremely susceptible to hydrologic impacts like flood events, and patches or beds can 'move' from year to year within the same waterbody. These ecological characteristics have been much discussed and studied in recent years as industry has challenged regulatory protections for wild rice, the legislature has attempted to weaken existing standards, and the MPCA was directed to conduct research specifically into water quality standards for wild rice.
Minnesota tribes have engaged in consultation with the MPCA on this culturally vital issue and provided recommendations for better protection of the wild rice that remains across a much-diminished range. The tribal cooperating agencies have engaged in consultation with the federal Co-lead agencies under Section 106 of the National Historic Preservation Act, continually elevating the need for protection of all remaining wild rice in the 1854 Ceded Territory. During consultation the Bands have provided information about tribal wild rice harvest in the Embarrass River far upstream of where the MPCA has recommended as 'waters used for the production of wild rice'. The wild rice sulfate standard must apply

[119] FEIS 4-32, 33.

throughout the Embarrass River watershed. The scant remaining stands in the upper reaches have already been severely impacted by previous mining disturbances and continued releases of high-sulfate water, and are in need of restoration.

> *...Given that current sulfate concentrations at PM-13 are almost always higher than the 10 mg/l wild rice sulfate evaluation criterion, the MPCA has developed three supplemental water quality performance criteria for sulfate at the Plant Site (MPCA 2011d)...*
>
> *Performance Criterion 1*
> *No increase in sulfate-loading from existing conditions would occur at PM-11 (Unnamed Creek, PM-19(Trimble Creek) and MLC-2 (Mud Lake Creek)*
>
> *Performance Criterion 2*
> *The concentration of sulfate in the Embarrass River at PM-13 would decrease from existing condition.*
>
> *Performance Criterion 3*
> *No statistically significant increase in sulfate would occur in the Embarrass River from upstream of the facility (e.g., PM12-2) to downstream of the facility (e.g., PM-13)*[120].

This contorted interpretation of 'compliance' under the Clean Water Act is not defensible. The NorthMet Project Proposed Action **must meet MN WQS**, including the sulfate criterion to protect wild rice. The FEIS fails to acknowledge that under the Clean Water Act, the state of Minnesota is required to bring impaired waters into compliance through TMDLs and other watershed restoration actions. The existing LTVSMC tailings basin, along with other inactive mine features, is clearly causing an exceedance of the wild rice sulfate criterion and has led to the decline in stand density and productivity within the watershed. The CEC scenario is not representative of the state's CWA obligations to restore impaired beneficial uses.

As stated previously, our concerns for protecting wild rice within this region of the 1854 Ceded Territory is based as much upon inadequate implementation of MN WQS protections, as upon the high likelihood that surface and groundwater discharges from the Project will exceed MN WQS. We consider the high probability of continued degradation of remaining wild rice stands in the Partridge and Embarrass River watersheds as a result of the NorthMet Project to be an unacceptable environmental impact.

G. Inadequate analysis of Project's effect on wildlife, corridors, aquatic species.

Tribal staff reviewed and commented on the updated Biological Assessment and the Biological Evaluation, but note that they are limited to discussions of impacts to federally listed species and Regional Forester Sensitive Species. The FEIS does not adequately discuss impacts to traditional uses such as hunting and trapping, nor does it adequately discuss impacts to traditional game and furbearer

[120] FEIS 5-218 through 221.

populations. This is a major discrepancy in these documents as healthy wildlife populations, particularly game and furbearer species, and access to them is critical for the exercise of treaty rights for tribal members.

The Proposed Project will result in over 4,000 acres of direct habitat effects (i.e., loss).[121] Fond du Lac's comments on the DEIS regarding the existing wildlife corridors are still applicable: they are fundamentally inadequate to maintain habitat connectivity across the heavily disturbed Mesabi Iron Range. As evidenced from aerial photographs, they're narrow and often heavily intruded upon by roads, utility corridors, mine pits and urban development. These features serve as barriers to many kinds of wildlife. While the existing corridors may function well enough for large, mobile species like deer or wolves, they are inadequate for smaller, less mobile species.

The FEIS concedes that increasing development of urban areas alongside the corridors will render some of the existing corridors "less suitable" for wildlife in the future. Increased urban development and associated transportation and utility infrastructure should be expected if the Project provides even a fraction of the economic benefits claimed in the FEIS. Yet there is no minimization or mitigation proposed or even evaluated in the FEIS for this significant environmental impact. The Band specifically requests that state and federal regulatory agencies work with the tribal agencies to establish dedicated and protected wildlife corridors and enhance reclamation of existing mine lands to mitigate wildlife impacts within the 1854 Ceded Territory.

In the FEIS, the Co-lead agencies note that:

> *Rail and vehicular traffic between the Mine Site and Plant Site would increase as a result of the NorthMet Project Proposed Action. While the Transportation and Utility Corridor is outside of wildlife corridors, they run parallel and perpendicular to the wildlife corridors and would potentially affect wildlife use. Tepper (2011) demonstrates the importance of road ecology, which studies the barrier effect of roads on plant and animal ecology. Tepper cites several examples of road underpasses (i.e., tunnels) or overpasses to provide corridors for plant and wildlife movement without having to cross the roadways. However, these wildlife crossings general require a large financial cost to construct. Leete and Alcott (2011) stated that Minnesota's relatively flat topography would not be suitable for large wildlife crossing, and suggested instead utilizing multiple low cost wildlife-friendly mitigation designs rather than one large crossing. Examples of such low-cost mitigation measures include passage benches under bridges, various sized of fencing effective on small herptiles to large mammals, and offset culverts. Mitigation measure for wildlife species would be considered during the Endangered Species Act Section 7 Consultation process.*[122]

The Band does not agree with this casual dismissal of an issue we consistently brought forward in our comments and in meetings with the Co-lead agencies. The ESA §7 consultation process is intended to determine jeopardy (likelihood of a species' extinction from the Proposed Action) and address

[121] FEIS 5.570.
[122] FEIS 5-448.

mitigation for impacts to endangered species. The ESA §7 process would not address mitigation measures for other species which are not presently endangered but which would be adversely affected by the loss of wildlife corridors. Again, the only reasonable process for fully evaluating likely impacts and then identifying and *requiring* mitigating actions is through the EIS and then with a fair examination of the impacts and mitigation measures in the EIS, implemented through the MnDNR Permit to Mine. The FEIS here fails to address an important issue, incorrectly leaves it to a process that will not address it, and deprives the public and the MnDNR of the information it should have to address this issue.

The FEIS further recites:

> *On February 25, 2009, the USFWS published the Final Rule for Revised Designation of Critical Habitat for the Contiguous United States Distinct Population Segment of the Canada Lynx (50 CFR 17). Portions of the Mine Site lie within the revised boundaries of federally designated lynx critical habitat, which includes most of northeastern Minnesota. A recovery plan has not yet been issued for the Canada lynx.*[123]

This is an identified impact of the NorthMet Project and Land Exchange, according to the revised Biological Assessment, along with significant and adverse impacts to gray wolf, gray wolf critical habitat, and northern long-eared bat. But, from the Band's perspective, perhaps the most significant deficiency in the FEIS analysis of wildlife impacts is its failure to critically analyze potential impacts to moose. As to moose, the FEIS states:

> *The moose (Alces americanus) is not federally listed, but was added to the Minnesota ETSC species list as a species of special concern in 2013.*[124]
>
> *Moose, which have been observed in the NorthMet Project area (ENSR 2005), are a species of specific importance to the Bands…The overall moose population in Minnesota declined approximately 35% from 2012 to 2013 (MDNR 2013d). The 2014 winter aerial moose survey estimated the population at 4.350 animals, up from the 2013 estimate of 2,760 (DelGiudice 2014). However, this is likely due to variability in the survey conditions from year to year and uncertainty inherent in the survey itself…Due to decreased population levels in the state of Minnesota and its new state listing as a species of special concerns, the moose hunting season was closed in 2013 and not reopened. In previous years, when moose hunting was open, the NorthMet Project area would have been outside of the hunting zone, though moose zone 30 is located to the south of the Transportation and Utility Corridor. In 2012, two moose were harvested in zone 30 (DelGiudice 2012).*[125]

The tribal cooperating agencies have consistently raised impacts to moose as an issue of critical importance throughout the DEIS, SDEIS, Section 106 consultation, and 'sieve list' meeting processes. We have valid concerns about the Project's impact on moose habitat at a time when their population is crashing, and they should be addressed immediately. Tribal wildlife biologists have been working

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[123] FEIS 4-234.
[124] FEIS 4-237.
[125] *Id.*

alongside DNR biologists and academic researchers to try to understand the relevant factors. Hunting pressure has been ruled out as a major contributing factor to population-level declines, but the appearance of holding a hunt does not sit well with the public, so the DNR, 1854 Treaty Authority and Fond du Lac have ***all*** closed their respective moose seasons since 2013. However, the Band's concern for Project impacts to moose is not simply potential effects to hunting zones and seasons; we are gravely concerned about protecting sustainable moose populations for future generations.

In considering the potential causes of the moose population decline, wildlife biologists recognize the importance of thermal refuge for moose when temperatures exceed 70° F.[126] Undisturbed, high-quality wetlands and forests - essentially all of the landscape that will be destroyed at the mine site – represent the type of habitat that serves as thermal refuge, along with shelter and forage.

EPA, in its comments on the preliminary FEIS[127], pointed out the absence of any discussion in the FEIS on measures that might avoid or mitigate the Project's adverse impacts on moose. EPA stated:

> *EPA understands that moose is a culturally important species for Chippewa tribes. The proposed Project is within the 1854 Ceded Territory, within which tribes exercise treaty-reserved hunting, fishing, and gathering rights. While the PFEIS adequately describes impacts to moose, it does not discuss avoidance, minimization or mitigation measures to reduce these impacts."*

EPA further recommended that:

> *...the Co-lead agencies continue to consult directly with tribal representatives to identify potential avoidance, minimization, or mitigation strategies for anticipated impacts to treaty resources. The FEIS should describe the outcome to date of this ongoing consultation, and resulting strategies.*

Notwithstanding EPA's recommendation, the FEIS includes no discussion of means by which the adverse impacts on moose might be avoided or mitigated. Instead, the response to the recommendation was the boilerplate statement ascribed to most of the substantive comments provided by cooperating agencies on the PFEIS: "The information and analysis as offered in the PFEIS is sufficient and appropriate for purposes of environmental review." This disposition by the Co-lead agencies of a critical deficiency in the EIS process is indefensible.

The FEIS presentation of existing conditions for aquatic communities (fish and macroinvertebrates) is deficient and potentially misleading.[128] The Co-lead agencies neglected to include and consider substantial readily available biological and water quality data *from the MPCA*, no less, which characterizes aquatic life use impairments in several streams and rivers within the NorthMet Project

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[126] Plenary presentation to Tribal Environmental Program Management conference (Chicago 2014), Seth Moore, PhD., Grand Portage tribal biologist.
[127] "NorthMet_PFEIS_comment_matrix_Cooper_Agencies_150924-forCL.xlsx," provided by Co-lead agencies to cooperating agencies on October 13, 2015.
[128] FEIS 4-260, 266, 279.

area, namely the Embarrass River, Wyman Creek, and Spring Mine Creek. The intensive watershed monitoring done in 2009-2010 within the St. Louis River Watershed also included substantial physical, chemical and biological data for many other stream and river stations within the Project area, and the Stressor ID Report for the waters in the St. Louis River watershed that were assessed as 'impaired' also includes a list of the stream and river stations that were used to develop summary statistics and establish 'reference condition' for this watershed.

The Band's comments on this matter in the 2009 DEIS pointed out the limitations of relying solely upon PolyMet-collected data to base predictions of Project impacts, and that criticism is still relevant. By only presenting their evaluation of biological community condition within the limited universe of data collected by the Project Proponent, the Co-lead agencies deliberately neglect to provide important context to the public about actual baseline or reference condition and existing impairments for fish and benthic macroinvertebrate communities that are largely the result of existing mining impacts. And, more importantly, these impairments have not yet been addressed through a TMDL or watershed restoration action.

The Band has also previously identified the lack of analysis of potential impacts to lake sturgeon as a deficiency in the SDEIS. This deficiency was not addressed in the FEIS. The FEIS summarizes the status of lake sturgeon, stating:

> *The species has been classified as threatened in both Canada and the United States by a special committee of the American Fisheries Society (Williams et al. 1989) and is a species of special concern in Minnesota.*
>
> *...A stocking program was initiated in 1983 to reintroduce lake sturgeon to the St. Louis River; however, stocking was reduced in 1995 and discontinued in 2000 (MDNR 1995). The stocking has resulted in an increase in lake sturgeon abundance in the St. Louis River estuary near Duluth (Schram et al. 1999). Two separate observations of juvenile lake sturgeon were observed by Fond du Lac and MDNR biologists near the Fond du Lac dam in 2011 and 2014, respectively, which indicates recruitment from naturally reproducing adult lake sturgeon, since no stocking has occurred below the dam since 2000 (MDNR, Pers. Comm. November 7, 2014). Fond du Lac has stocked lake sturgeon into the St. Louis River above the Fond du Lac dam near the confluence with the Cloquet River and within the Cloquet River near Independence, Minnesota. Fond du Lac has 2012 through 2014 lake sturgeon telemetry data, which indicates juvenile and adult sturgeon have been located near Floodwood, Minnesota, downstream from the confluence of the Whiteface River and St. Louis River (MDNR, Pers. Comm., January 12, 2015). No fish have been observed upstream of this location and migration of lake sturgeon from this location would be blocked by the dam at Forbes, Minnesota, approximately 14 miles downstream of the Embarrass River confluence with the St. Louis River.*[129]

[129] FEIS 4-274, 275.

Lake sturgeon have been successfully reproducing in the estuary for several years, and Fond du Lac Resource Management Division's successful reintroduction and tracking efforts in the upper river have been documented.[130] After the construction of hydroelectric facilities on the St. Louis River in the early 1900's, the lake sturgeon population in the upper St. Louis River was isolated from the lower estuary and Lake Superior.[131] The remaining sturgeon population was likely extirpated due to exploitation and pollution from the wood products industry and municipal waste. In addition, many of the upper tributaries were dammed during the extensive white pine logging era (1800's) in order to float logs down during the high water spring runoff. Pollution and degraded water quality has been identified as a factor limiting sturgeon abundance in many locations. [132] The conclusion at FEIS 4-275 that "There are no known occurrences of lake sturgeon and not likely habitat for lake sturgeon within the NorthMet Project area" neglects to consider that **downstream water quality effects** may result from the Proposed Project. *This* water quality effect is specifically what the Band expected to see addressed in the FEIS, as it represents yet another potential degradation of our downstream water quality that is explicitly relevant to our stated resource management goals for *name*, or lake sturgeon.

A dramatic recovery in lake sturgeon abundance in Rainy River and Lake of the Woods followed improvements in water quality in the Rainy River, which resulted from substantial reductions in the amount of wood fiber and untreated chemical wastes discharged by upstream pulp and paper mills.[133] Evidence from hatchery rearing studies show that juvenile sturgeon can only tolerate salinity < 23 ppt.[134] The Band is concerned about protecting the both the habitat and water quality necessary to support our reintroduction efforts. Uncontrolled contaminant loading from existing mine facilities, added to elevated contaminants from the Proposed Project, have the potential to affect the successful establishment of a sustainable lake sturgeon fishery throughout the St. Louis River. This potential impact should have been fully evaluated in the FEIS.

H. Inadequate analysis of Project's effect on air quality.

The Band's consistently expressed concerns for potential air quality impacts from the Proposed Project (a new source of mercury, visibility in a Class 1 airshed, fugitive dust impacts to terrestrial and aquatic resources, asbestos-like mineral fibers) from the Proposed Project remain largely unaddressed in the FEIS.

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[130] *Lake Sturgeon Restoration in the Upper St. Louis River, Minnesota*, poster presented at the Great Lakes Lake Sturgeon Coordination Meeting, 3 – 4 December 2012, Sault Ste. Marie, MI.
[131] *Id.*
[132] Dick, T. A., et al 2006. COSEWIC assessment and update status report on the lake sturgeon (*Acipenser fulvescens)* in Canada. Ottawa, Ontario. 107 p.
[133] Mosindy, T. E. and J. Rusak. 1991. An assessment of the lake sturgeon population in Lake of the Woods and Rainy River. Lake of the Woods Fisheries Assessment Unit Report 1991- 01. Ontario Ministry of Natural Resources. Kenora, Ontario. 66 p.
[134] *A Review of Lake Sturgeon Habitat Requirements and Strategies to Protect and Enhance Sturgeon Habitat March 2011.* Steven J. Kerr, Michael J. Davison and Emily Funnell, Fisheries Policy Section, Biodiversity Branch. Ontario Ministry of Natural Resources.

FEIS (Table 5.2.7-1) is incomplete; it does not show the recently promulgated ozone standard of 0.070 ppm. This value should be added.

The FEIS states that the ambient air boundary for the Plant and Mine Sites (and 1,000 meters beyond) is used to define the maximum extent of NorthMet air impacts that would have the potential to affect wetlands that were not directly affected.[135] The Band again asserts (as we have previously) that these property boundaries cannot arbitrarily be used for acid dust and metal deposition boundaries because there are no ambient air quality standards for these pollutants. While secondary ambient air quality standards do exist for vegetation, these are not to be used for deposition. "Deposition" is a concentration of a pollutant that settles out of the air onto a surface. Therefore, compliance with traditional ambient air quality modeling and the range where such compliance occurs cannot be used with regard to the deposition of these pollutants on the ground, water surfaces, and vegetation.

The analysis in Section 5.2.1.4.1 of PolyMet 2015b (fugitive dust) is also inadequate because it looks only at deposition on plant surfaces and does not evaluate how that deposition will impact water quality. This is in contrast to the analysis performed in Attachment D of the same document, which evaluates how dust from railcar spillage will impact water quality. The deposition values from Section 5.2.1.4.1 should be run through a proven water quality model to complete this analysis. The Band does not consider GoldSim to be a proven water quality model because we have been unable to verify neither the inputs to the model nor the equations that govern this model.

The FEIS states on page 5-310 that modeled annual dust deposition rates were compared to an "annual effects-level deposition rate" (background) of 365 $g/m^2/yr$. Apparently this "annual effects-level deposition rate" is a potential effects threshold for photosynthesis due to "dusting" of the plant's surface. However, direct physical effects of mineral dusts on vegetation can be seen at a surface load of 7 g/m^2 and chemical effects of reactive materials can be seen at 2 g/m^2 [136]. These levels indicate that the proposed "impact" level of 365 $g/m^2/yr$ is too high. Further, as the Band commented on both the PSDEIS and the SDEIS, the modeled deposition rates only look at impacts to photosynthesis due to blocking sunlight from the plants' leaves, they do not include the effects of contamination from metals, nor contamination from other sources, such as pit leaks and seepage, nor are cumulative impacts from all of these sources included in Chapter 6.

The Class I Deposition Analysis Threshold set by Federal Land Managers for both nitrogen and sulfur deposition in the eastern half of the US (including Minnesota) is 0.01 kg/ha/yr. If one takes the effects level threshold discussed on page 5-310 of the FEIS (365 $g/m^2/yr$) and converts it to similar units (assuming the dust is 0.12% sulfur), the threshold level proposed as adequate for the area is 438 kg/ha/yr, or 43,800 times the amount of sulfur deposition that is allowed in a Class I area. While the proposed site is not a Class I area, this DAT is a better measure for the type of impact that the Band fears.

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[135] FEIS 5-310 and 5-335.

[136] Prajapatie, Santosh Kumar, "Ecological effect of airborne particulate matter on plants." Environmental Skeptics and Critics, 2012, 1(1):12-22.

The FEIS (page 5-312) erroneously states that "all of the receptor nodes with the highest model-estimated deposition rates were located within the ambient air boundary". The following paragraph contradicts this statement by saying "of the 234 acres of wetlands, (that could be potentially indirectly affected) 228 acres would be located within the Mine Site ambient air boundary". While only 3% of the affected acres are outside of the boundary, these two statements should be reconciled. The inaccuracy serves to diminish consideration of any impacts. This comment was made by Fond du Lac in our reviews of both the SDEIS and PFEIS and has not been addressed. See Figure 5.2.3-17 of the FEIS.

FEIS Figure 5.2.3-22 depicts receptors outside the plant site that are predicted to receive dust deposition rates higher than 100% of background. FEIS Figure 5.2.3-23 depicts receptors outside the plant site that are predicted to receive metal deposition rates higher than 100% of background, but there is no discussion regarding monitoring or management actions to quantify or mitigate affects. As the Band has commented before, 90% of the ***area*** predicted to be impacted does not lie within the ambient air quality boundary (text states that 90% of the receptor nodes lie within the boundary); it appears to be only about 60% contained to the ambient air quality boundary. It is also irrelevant whether these areas lie within the ambient air quality boundary, as they are not required to meet ambient air quality standards for deposition - it is more relevant whether they are all within the Plant and Mine Site, and both Figures 5.2.3-22 and 5.2.3-23 show that this is not the case.

Page 5-559 of the FEIS states that "mitigation measures would be taken to avoid or minimize effects on historic properties, to the extent practicable" but the impacts of dust on these important properties were not specifically mentioned.

PolyMet 2015b, Attachment D, (Barr memo written by Peter Hinck, Dec. 21, 2012) studies spillage of dust from railcars. Text on page 260 of Attachment A of PolyMet 2015b indicates that a "goal" of a less than 10% likelihood of an exceedence of the water quality standards is acceptable. The modeling performed for this source found that four constituents had modeled concentrations with a greater than 10% likelihood of exceeding surface water quality standards at the edge of the spillage zone, using the GoldSim Monte Carlo package. These constituents were aluminum, cobalt, copper, and nickel. With regard to this same topic, the FEIS references PolyMet 2015q, which was written on February 13, 2015. Section 8.4.3 of this document also addresses spillage from railcars. It is unclear how PolyMet 2015q relates to the Barr memo of 2012 found in PolyMet 2015b. The text does not suggest that the 2015 document is an update of the 2012 one, but the two are not identical, either. The 2012 study looked at spillage over a width of 2 meters on either side of the railway, for a total of 4 meters of width. The 2015 memo appears to only study 2 meters width total, rather than 4 meters. The 2012 study estimated a mass of spilled ore equivalent to 2.14 kg/m^2 at the end of 20 years but does not appear to give the distance of rail line that was covered. The 2015 report estimates spillage of 55.7 kg/m^2 over 20 years over the first 1000 meters of the transfer corridor, or 4.28 kg/m^2 over the entire 13 km rail corridor. Another difference is that the 2012 memo ran these results through the GoldSim model to look at predicted water quality, but similar results from the 2015 study are not included in Section 8.4.3, nor is there any reference to where the results may be found. At best, this is extremely confusing for the reviewer and makes the assertion that "no impacts are expected" impossible to verify. The Band has already expressed concerns with the use of the GoldSim model due to the "black box" nature of the inputs used and the governing equations for the model.

Further, the FEIS confuses the results from PolyMet 2015b and PolyMet 2015q. The FEIS statement:

> *"An estimate of the spillage of ore fines along the rail corridor is provided in Section 8.4.3 of the Waste Characterization Data Package (PolyMet 2015q). Assuming that all spillage of the coarse material would occur in a 2-meter-wide strip on both sides of the centerline of the railway (total width equals 4 meters) over the entire haul distance after loading (approximately 8 miles or 13,000 meters), results in approximately 0.11 kilograms per square meter (kg/m^2) of ore fines annually or 2.14 kg/m^2 for the 20-year NorthMet Project Proposed Action. This equates to 0.002 inch of depth annually or 0.05 inches for the 20-year NorthMet Project Proposed Action"*[137]

is incorrect because these results actually came from PolyMet 2015b. What PolyMet 2015q finds is different. See PolyMet 2015q, Section 8.4.3 - ***"Assuming that all spillage occurs in a 2 meter wide strip along this portion of the rail corridor, it is estimated that approximately 2.78 kg/m^2 could spill annually or 55.7 kg/m^2 over the life of the Project. This is equivalent to 1.25 inches of spilled material over a 2,000 m^2 area".*** The FEIS also leaves out any mention of the 55.7 kg/m^2 value.

Additionally, the FEIS (page 5-164) states that the spilled material would become rapidly depleted of sulfide materials compared to the waste rock stockpiles. This statement offers nothing in the way of quantification of the amount of sulfide that would be released, nor does it address the metals that would also leach from the material. As mentioned above, PolyMet 2015q predicts that metals concentrations have the potential to exceed water quality standards for four metals: aluminum, cobalt, copper, and nickel. On the basis of this and the above arguments, the Band believes that the FEIS does not adequately address this topic.

The FEIS discusses refurbishment of existing ore cars that would reduce spillage by 97%, to 0.20 tons per year. (PolyMet 2014a)". The Band proposes that this modification requirement be incorporated into the final permit for the facility.

The FEIS states that most of the potential spillage from the rail cars will occur within the first 1,000 meters of rail from the Rail Transfer Hopper (page 5-164). The Band disagrees with this assessment. "The Fugitive Dust Risk Management Plan (FDRMP) for Red Dog Operations, Alaska (August 2008, draft) states: "Elevated metal concentrations have been identified in tundra in areas surrounding the DMTS, primarily as a result of deposition of fugitive dust originating from the DMTS corridor, which is used to transport zinc and lead ore concentrates from the Red Dog Mine, operated by Teck Cominco Alaska Incorporated (Teck Cominco)". The use of 2 meters on either side of the railway is inadequate.

As the Band has noted in previous comments on this issue, the Co-lead's only 'mitigation' for fugitive sulfide dust is recommending future wetlands monitoring. Additionally, the FEIS suggests water spraying for areas of fugitive dust release during dry periods as mitigation.[138] In the case of dust that may have high acidic content, this would be a poor choice for management action, as the addition of

[137] FEIS 5-313.
[138] FEIS 5-412.

water to the dust would likely create or accelerate toxic run-off, as the Band suggested in our comments on previous versions of this EIS.

Another inadequacy of the FEIS is its failure to predict impacts from sulfate from both fugitive dust and railcar spillage on methylation of mercury in wetlands and waters on-site. Dr. Branfireun's expert comments regarding increased mercury methylation in wetlands and direct releases of mercury, sulfate and methylmercury from the Project increasing methylmercury in tributary streams, the Partridge and Embarrass Rivers and downstream in the St. Louis River are relevant to this deficiency.

On page 5-500 of the FEIS, the Mine Site multi-pathway cancer risk for a hypothetical farmer was found to be equal to the MDH additional lifetime cancer risk guidance level of 1E-05. Although this level is "guidance" and not a regulatory action level, the Band believes this value indicates the potential for adverse health effects. The major risk drivers for this value were dioxins and dibenzo(a,h)anthracene. Dioxins are very persistant and bioaccumulative in the environment, and can cause an increase in cancers, various immune system alterations, developmental and reproductive disorders, and endocrine disruption. Dibenzo(a,h)anthracene is a probable human carcinogen and can cause respiratory and digestive tract irritation.

In the Human Health Incremental Risk Assessment, the Plant Site multi-pathway cancer risk for a farmer was found to be equal to the MDH additional lifetime cancer risk guidance level of 1E-05. Although this level is considered "guidance" and not a regulatory action level, the Band believes this value clearly indicates the potential for adverse health effects. The same result was found for the off-site worker inhalation additional lifetime cancer risk. The major drivers for these endpoints were cobalt, nickel, and dioxins (farmers only). Exposure to nickel has been linked with increased risk of lung cancer, cardiovascular disease, neurological and developmental deficits, and high blood pressure. Exposure to cobalt can cause lung effects such as asthma and pneumonia. Cobalt can also be radioactive.

As shown in the FEIS (Table 6.2.7-6), cumulative inhalation risks for non-cancer chronic and non-cancer acute effects from both the facility and existing sources are equal to the incremental acute risk guideline value of 1. This shows that the predicted impacts of NorthMet, when added to the toxic releases already prevalent in the area, have reached the level where health authorities begin to be concerned about cancer risks. Although this level is "guidance" and not a regulatory action level, the Band believes this value indicates the potential for adverse health effects.

Also from the FEIS (Table 6.2.7-6), cumulative inhalation risks for cancer are four times greater than the guideline of 1E-05. Although much of this risk comes from existing facilities, this number indicates that the area cannot sustain pollution that adds to what is already there without compromising health. Our previous comments on this issue have not been adequately addressed.

The Band has also continued to raise concerns for amphibole fibers, and what we perceive as insufficient analysis in the FEIS. According to the FEIS, the BACT-like fine particulate controls will control the release of more than "99.9% of amphibole fibers that are emitted from controlled sources", not "99.9% of fibers in the ore".[139] The second statement is incorrect, because some sources of fibers from the ore are

[139] FEIS 5-471.

uncontrolled, like blasting operations, or are unable to be controlled up to 99.9%, like haul roads, tailings, crushing and screening, and stockpiles.

The SDEIS stated that the Biwabik Iron Formation (which has been found to contain amphibole fibers) slopes under the Duluth Complex at the Mine Site, coming within 100 feet of the area that the company plans to mine. The Band's previous comments regarding unexamined hydrological connections between geologic layers or formations are also applicable in this instance. With fractured bedrock present, that could establish a hydrological connection, and 100 feet would be an insufficient barrier. Additionally, these types of formations are characteristically not homogeneously distributed, meaning that pockets of fibers could be found unexpectedly. While it is true that some information on the occurrence of amphibole fibers has been gathered from the site, the drill locations were chosen with regard to studying minerals of economic interest, and did not specifically target locations where fibers may be expected to occur. The Band notes that the FEIS does not provide the same level of detail that the SDEIS did regarding this subject. Page 5-515 of the FEIS only states that "It should be noted that taconite is mined in the Biwabik Formation, whereas the ore proposed to be mined for the NorthMet Project Proposed Action is from the Duluth Complex, which is not in contact with the Biwabik Formation at the NorthMet Deposit". This appears to be an attempt to address concerns regarding potential contact with fibers by misleading the public, i.e. simply removing any data that may cause concerns.

The 2013 SDEIS maintained that the University of Minnesota, School of Public Health has reported that males within the area of the taconite mining and milling industry had more than two times the mesothelioma rate than the rest of the state.[140] As the Band commented at that time, the report from the epidemiologic study of Minnesota iron mine workers actually states that the rate of mesothelioma among mine workers is nearly three times the rate found in the rest of the state. [141] It was a matter of great concern to the Band to find that *most pertinent details of this study have now been removed from the FEIS.* The Taconite Workers Health Study concluded that:

- Taconite workers had higher than expected death rates from three diseases: mesothelioma, lung cancer, and heart disease.
- The length of time people worked in the industry was linked to higher levels of mesothelioma but not lung cancer.
- Exposure to elongate mineral particle was linked to mesothelioma but not lung cancer
- Workers with above-average exposure to dust containing EMPs were twice as likely to develop mesothelioma as workers with below-average exposures.
- A screening of current and former taconite workers and their spouses revealed x-ray evidence of dust-related scarring of the lung and lung lining in workers.
- There was a link from EMP exposure in workers to scarring of the pleura.
- Spouses of taconite workers had comparable evidence of lung scarring on chest x-ray, to what's been reported for the broader general public.

The Band is extremely disturbed to note that the FEIS (page 5-515 through 5-516), while including some brief conclusions from the study, does not list the conclusions shown in the bullet points above. While

[140] SDEIS 5-439.
[141] University of Minnesota, 2013.

the study concludes that "The role of a specific EMP type of exposure is not clear" it appears that the FEIS is attempting to downplay the possibility of a causal relationship between exposure to fibers and the occurrence of the diseases listed above.

The FEIS assures that ambient air monitoring for amphibole fibers will be conducted following facility start-up.[142] While no schedule of frequency or duration for amphibole fibers monitoring has been proposed in the FEIS, the Band continues to assert, as we have throughout the environmental review process, that monitoring will need to continue over the life of the mine, as no one can predict when fibers might be contacted and released. The Band cautions that several monitors may be needed to adequately protect human health in the future.

A cumulative analysis of fibers expected from the site along with fibers currently being emitted from other sources should be performed. Human health risk assessments should be expanded to include scenarios of worker exposure to amphibole fibers.

On October 6 and 7, 2015, a conference on Asbestos-like Mineral Fibers in the Upper Midwest was held at the EPA's Mid-Continent Ecology Division facility in Duluth, MN. Several prominent scientists in the field presented research at this conference. Although much of the data has not yet been publicly released, it is surprising that this section of the FEIS was not updated to discuss the preliminary findings of these scientists. Several examples of issues that were brought forward at the conference are listed here, along with the name(s) and affiliation of the researcher(s) who presented on each topic.

- Cleavage fibers should be counted. While cleavage fragments are mentioned on page 5-513 of the FEIS, the FEIS says only that there is "on-going debate about whether exposure to thoracic-size non-asbestiform amphibole cleavage fragments also increase the risk for certain respiratory diseases, but there is currently no consensus on the issue". Presenters at the conference seemed to feel more strongly about this issue. Some of the points made were that: even soils with very low concentrations can generate harmful exposure in air, even at trace or non-detect levels (Chris Weis, National Institute of Environmental Health Sciences); the thinnest fibers are the strongest predictors of disease because they can squeeze through tissues the short way rather than the long way (Jim Webber, Webber Environmental Health Consulting, LLC); High Resolution Computed Tomography (HRCT) scans find a lot more health issues than x-ray (James Lockey, University of Cinncinnati)
- Auto-immune diseases could be influenced by EMPs. These include: type one diabetes; multiple schlerosis; autoimmune thyroid; lupus; rheumatoid arthritis; fibrosis; kidney disease (Jean Pfau, Idaho State University). Problems in Libby, Montana, showed that amphibole is worse than chrysotile (Pfau). A broad range of fibers contribute to health issues, not just long ones (Pfau).
- Content of fibers in rock varies considerably, even within individual samples, from 2.5-60% (Robert Stevenson, Materials and Chemistry Lab, Inc (retired)/Steve Ring, MN Department of Health).
- PolyMet is located near areas of cooling units, where EMPs could be expected to be found (Dean Peterson, Peterson Geoscience LLC)

[142] FEIS 5-519.

- While the NRRI has written a proposal to study personal exposures, the EPA has commented on a number of ways this study could be improved (Dan Vallero, EPA, Research Triangle Park).

I. Inadequate analysis of geotechnical stability: tailings basin, hydrometallurgical residue cells and performance of engineered controls.

The tribal cooperating agencies were not permitted to participate in the Geotechnical Stability IAP workgroup, so we are at a disadvantage for understanding how some of the profound geotechnical stability risks identified for the PolyMet Project as defined in the 2009 DEIS were resolved for the 2013 SDEIS or the 2015 FEIS. We have noted many design changes, and have attempted to understand how each modification would affect environmental impacts. We find it confusing, given the decades-long Minnesota DNR-permitted practice of designing and building tailings basins to be purposefully "leaky" in order to provide *stability*, that the Proposed Project now includes substantial 'reinforcements' such as rock buttressing at the toe of dams, bentonite amendments to the dam walls, and the concrete pillars drilled into unstable tailings slimes.[143] There are certainly ample and recent examples of catastrophic failure of similar tailings disposal around the world (Mt. Polley in British Columbia[144], Samarco iron ore tailings dam collapse in Brazil[145]), and even here in Minnesota (Arcelor Mittal mine tailings pipeline and tailings basin perimeter dike failures[146]; Hibbing Taconite tailings basin emergency measures in response to 300' crack in tailings dam[147]). In the FEIS, the Co-lead agencies have chosen to forego analysis of dam failure, a reasonably foreseeable occurrence, sufficiently to understand the risks of the Proposed Project's tailings disposal and explore alternatives to minimize those risks.

Fond du Lac continues to question the design, location, and performance estimates for the Hydrometallurgical Residue Facility. The FEIS states:

> *The Hydrometallurgical Residue Facility would be double-lined to minimize release of residue leachate. The double liner would consist of a composite liner system utilizing a geomembrane liner above a geosynthetic clay liner, with a second liner placed above the first, separated by a leakage collection system. This would substantially remove hydraulic head from the lower liner and thereby virtually eliminate leakage to groundwater from the Hydrometallurgical Residue Facility.*[148]

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[143] FEIS 5-645.
[144] *See* Chambers, 2015, presented as Exhibit 21 in WaterLegacy FEIS comments: *Comments on the Geotechnical Stability of the Proposed NorthMet Tailings Basin and Hydrometallurgical Residue Facility in light of the Failure of the Mt. Polley Tailings Storage Facility*).
[145] *See* "Dam burst at Vale, BHP mine devastates Brazilian town," *available at* http://www.trust.org/item/20151105213647-fe3eg/?source=hpMostPopularTheWire (last visited December 14, 2015).
[146] MPCA and EPA enforcement actions, June 2015.
[147] Public Notice of Application for CWA Section 404 Permit, Hibbing Taconite Company 2012-00623-DWW, August 12, 2012.
[148] FEIS 3-125.

As previously expressed, we do not share PolyMet's confidence in being able to virtually eliminate leakage to groundwater from any type of containment system. Some leakage must always be assumed, and given the site-specific conditions for the proposed location of the HRF, the risk for highly contaminated seepage to exit the HRF and flow to wetlands in the Embarrass River watershed is high.

The FEIS states:

> *As shown in Figure 4.2.14-2, the Hydrometallurgical Residue Facility is located in a natural low point in the topography adjacent to Cell 2W of the existing LTVSMC Tailings Basin and over the existing LTVSMC Emergency Basin and the adjacent undisturbed ground. The southern tip of the existing LTVSMC Emergency Basin begins near the central portion of the Hydrometallurgical Residue Facility, widening and deepening into a former ravine that trended to the north. Seepage from the LTVSMC Emergency Basin occurs to the northwest between Cell 2W and a railroad grade located along the western perimeter of the area. This and additional seepage would be collected in a constructed drainage blanket between the LTVSMC embankment and the Hydrometallurgical Residue Facility embankment, and collected water would be conveyed away from the coincident area.* [149]

This statement completely avoids clarifying that this 'natural low point in the topography' is an open water wetland (as prominently displayed in the left photograph on the cover of the FEIS) with distinct natural drainage channels[150]. The LTV Emergency Basin was purposefully sited in a place where tailings discharges (slimes, fines, coarse tailings) could be gravity-fed and efficiently contained in the event of a power failure or similar incident that would require draining the tailings slurry system. It also contains accidental overflows, spillage and floor drainage from the former LTV Concentrator Building, deposited by gravity and overflow from sumps at a nearby pump house.

The FEIS states:

> *A 0.03-acre area of sedge/wet meadow within the Tailings Basin and a* ***28.6 acre area of shallow marsh within the Hydrometallurgical Residue Facility*** *are anticipated to be regulated as they are both located within the Cliffs Erie Permit to Mine Ultimate Tailings Basin Limit Boundary. The incidental status will be determined during wetland permitting.*[151]

The significance of the site topography and natural drainage features is more relevant to our concerns than the regulatory status of the wetlands. The FEIS simply does not address the potential lack of integrity or risk of failure when constructing a hazardous waste facility within a wetland. Assumptions about hydraulic head being removed from the lower liner are not reassuring when the lower liner (geosynthetic clay) has been installed within a wetland and natural drainage ravine. *Any* leakage that escapes from the geomembrane liner has an increased risk of draining to shallow groundwater in this

[149] FEIS 4.2.14.3.1.
[150] FEIS Figure 4.2.14-6, Figure 4.2.14-7.
[151] FEIS 4-190.

environment as compared to a dry, upland environment. That is why modern landfills cannot be sited as proposed for the NorthMet Project; federal standards[152] or equivalent state standards must be met. Minnesota statutes preclude the siting of a hazardous waste or solid waste facility in a wetland or in a location where the topography, geology, hydrology or soil is unsuitable for the protection of the ground water or surface water.[153] Although the Co-lead agencies maintain that the HRF is not subject to RCRA, and exempt from hazardous waste restrictions and reporting, it is still subject to state law on the matter.

There is insufficient information revealed in the FEIS to clearly understand the chemical composition of the HRF waste material, and unreasonable assumptions of liner leakage and performance. And as presented in the FEIS, there are two new sources of contaminants planned for disposal in the HRF: water treatment plant solids (primarily gypsum), and coal ash wastes from the existing LTVSMC site Coal Ash Landfill,[154] one of the previously identified AOCs subject to the Consent Decree. These new, potentially toxic and reactive wastes may represent up to 10% of the HRF solids volume[155], yet there is no characterization of the mass or concentration of chemicals resulting from the co-disposal of these wastes with the Hydrometallurgical process wastes. The FEIS, instead of providing this analysis up front, states that if the Project is approved, the residue should then be tested to verify that it is not hazardous.[156]

The potential for substantial volumes of **seepage flowing from the Tailings Basin to the HRF** has not been addressed in the FEIS; this represents another potential structural hazard. We can assume that the HRF has been designed to capture toxic drainage from the hydromet residue itself, with seepage volume estimates associated with the hydromet process. But we have no assurance that the HRF is designed to structurally withstand thousands of gallons per day of Tailings Basin seepage along the dikes that do not have seepage capture features installed.

J. Inadequate assessment of indirect impacts to wetlands; inadequate mitigation for direct impacts.

The tribal cooperating agencies have exhaustively challenged the Co-lead agencies' approach to predicting indirect impacts to wetlands and their resulting conclusions, as an overly simplistic method based upon a flawed concept of hydrology at the mine site. This remains a major deficiency in the FEIS, and is a significant unresolved issue for the Bands, who are concerned about direct, indirect, and cumulative effects to the high quality wetland resources that would be affected by the NorthMet Proposed Project. The FEIS describes the wetlands within the Project area itself stating:

> *Within the NorthMet Project area, 105 of the 166 wetlands (63 percent) are rated as high-quality, 11 wetlands (7 percent) are rated as moderate-quality, and 50 wetlands (30 percent) are rated as low-quality. The low-quality wetlands are located at the Hydrometallurgical Residue Facility, existing LTVSMC Tailings Basin, and Colby Lake*

[152] 40 CFR §258 (Subtitle D of RCRA).
[153] Minn. R. 7045.0460, Subp. 2, Minn. R. 7035.1600.
[154] FEIS 5-178, PolyMet 2014c.
[155] FEIS 4-445.
[156] FEIS 5-609.

> *water pipeline corridor. The moderate-quality wetlands are located at the Mine Site and the existing LTVSMC Tailings Basin. Wetlands at the Mine Site and Transportation and Utility Corridor are ranked as high-quality.*[157]
>
> *Approximately 92 percent of the wetlands in the Mine Site are of high overall wetland quality, and 8 percent of wetlands are of moderate overall wetland quality. High-quality wetlands have low disturbance levels and high vegetative diversity and integrity. Moderate-quality wetlands have impounded open water because of beaver dams and downstream culverts under Dunka Road or the railroad, are adjacent to USFS roads, the Dunka Road corridor, or the railroad corridor (PolyMet 2013b).*
>
> *The wetlands along the Transportation and Utility Corridor have all been rated as high-quality. While the wetlands along the Railroad Connection Corridor are moderately affected by either a haul road or an existing railroad, they have a high vegetative diversity/integrity (PolyMet 2013b).*
>
> *…The vegetation types located at the Mine Site are indicative of pre-settlement conditions and lack hydrologic disturbance. The hydrology of the wetlands at the Mine Site has been stable over time (Barr 2008h)…. However, monitoring would detect connectivity trends and reveal potential drawdown issues,* ***which would then be mitigated as direct effects****.*

The purpose of an EIS is to be "forward looking" by predicting potential impacts and adequate mitigation for those impacts; this FEIS is deficient in that respect. The USACE maintains that the best way to determine and mitigate indirect wetland impacts is through a monitoring plan to assess after-the-fact Project impacts to wetlands. The Band is not aware of any previous instance for which the USACE St. Paul District Office has required reasonably foreseeable indirect wetland impacts to be later mitigated as direct effects based upon monitoring.

GLIFWC staff have long advocated for the use of the 'Crandon method' of determining indirect wetland impacts; this method was based upon their experience, working with the US Army Corps of Engineers, in reviewing other proposed mines in the region including the proposed Crandon mine in Wisconsin. While the FEIS maintains that the Crandon method *is* used in the assessment of indirect wetland impacts for the NorthMet Proposed Project, it clearly has not been used. The Crandon method relies upon a detailed delineation of wetlands leading to accurate wetland classifications, and an accurate characterization of groundwater hydrology supported by a calibrated groundwater model. The NorthMet Project lacks both of these critical data elements.

Field work conducted by staff from the Co-lead agencies, tribal cooperating agencies, EPA Region 5 staff, intertribal agencies, and the Project consultant in September 2010 determined that 25% of the wetlands that were visited were incorrectly classified. All of those wetlands were found, during the site visit, to have more connectivity with groundwater than the original classification, and field observations could not definitively rule out groundwater connectivity for a number of wetlands (memo from S. Eggers,

[157] FEIS 4-160.

2015). Monitoring sites were established in a subset of the wetlands, but that data has not been used in any analysis of indirect wetland impacts.

And, despite the unanimous request from the Wetlands IAP workgroup (consisting of technical staff from the tribal agencies, the US Fish & Wildlife Service, the MnDNR and the MPCA) to develop and calibrate a groundwater model so that the Crandon method could be implemented, the Co-lead agencies refused to do so, maintaining that such a model would be too complicated and would not yield useful information. Instead, the Co-lead agencies determined that drawdown data from the Canisteo Pit, a taconite pit on the western end of the Mesabi Range, would be an appropriate analog for groundwater drawdown at the NorthMet mine site. The Canisteo Pit is located in a different geologic formation and at a different elevation than the NorthMet site; further, the Co-lead agencies used this 'analog' data selectively, to support their predetermined conclusion that drawdown in adjacent wetlands would be minor; they ignored analog wells that indicated a substantial effect. GLIFWC submitted an independent indirect wetland analysis for the NorthMet Mine site (published in Appendix C of the 2013 SDEIS), using the Crandon method appropriately.

The FEIS recognizes that:

> *Sites of High Biodiversity Significance contain very good-quality occurrences of the rarest species, high-quality examples of rare native plant communities, and/or important functional landscapes (MDNR 2008a). The entire 3014.5-acre Mine Site has been characterized by the MBS as various Sites of High Biodiversity Significance due to the presence of the One Hundred Mile Swamp site, which covers 15 percent of the Mine Site, and the Upper Partridge River site, which is 85 percent of the Mine Site (MDNR 2008a).*
>
> *Native plant communities are also ranked by the MDNR by their quality abundance in a given area. "Imperiled" or "vulnerable" designations indicate that the communities have high ecological value, are rare in a given area, and/or could face danger of extirpation….*
> *…Two native plant communities, black spruce-jack pine woodlands (FDn32c; 34 percent of Mine Site) and rich black spruce swamp (FPn62a; 7 percent of Mine Site), have been characterized by the MBS as "imperiled/vulnerable" and "vulnerable," respectively (MDNR 2008b).*[158]
>
> *There are two MBS Sites of High Biodiversity Significance (18.8 acres) located within the Transportation and Utility Corridor, including the One Hundred Mile Swamp (2 percent of the Corridor) and the Upper Partridge River (13 percent of the Corridor) (MDNR 2008a).*[159]

There is substantial evidence of the high quality and functional values of the existing wetlands and vegetation communities at the Mine Site. Nearly 2,000 acres of coniferous bog wetlands will be directly

[158] FEIS 4-201.
[159] FEIS 4-223.

impacted by mine pit(s) and stockpiles, or indirectly impacted due to drawdown and/or pollution. This is particularly significant to the Band because many tribally harvested resources are only available in coniferous bogs, and restoration of coniferous bogs is a very difficult and long process that has extremely low success rates.[160] The Band's St. Louis River ecosystem services valuation is precisely the type of analysis that should be provided in the FEIS for public awareness, and to be considered in the USACE's public interest determination as it develops its Record of Decision on the §404 permit.

Because of the Co-lead agencies' decision not to incorporate or even consider this analysis, GLIFWC staff followed the methodology used in the ecosystem valuation study for the St Louis River watershed to characterize losses in ecosystem services to the watershed as a result of the land exchange and the NorthMet Proposed Project[161]. The analysis of direct impacts includes wetlands filled at both the mine and plant sites. The analysis of indirect wetland impact focuses on the mine site of the proposed Project which is the area of the proposed land exchange, and does not include indirect wetland impacts at the plant site. GLIFWC found **that direct impacts of the Proposed Project would result in loss of $1,358,089 to $5,134,185 per year in wetland ecosystem services; over the 20 year life of the Proposed Project, the St. Louis River watershed would lose between $27,161,780 and $102,683,700 in wetland services**. This is but one example of the possible applications of the ecosystem valuation study that should have been done by the Co-lead agencies as part of the NorthMet FEIS.

The proposed mitigation plan is inadequate; it allows for the vast majority of mitigation and/or restoration credits to come from outside the Partridge, Embarrass, and St. Louis River watersheds. There is no justifiable reason to permit out-of-watershed mitigation when in-watershed opportunities still exist, especially when the St. Louis River watershed as a whole has experienced cumulative wetland destruction, degradation and hydrologic alterations in well over 50% of the watershed.[162] In fact, unresolved wetland mitigation challenges and opportunities throughout northeastern Minnesota has led to an effort by an Interagency Review Team to improve wetland conservation and mitigation efforts in Bank Service Areas 1 and 2 (the Rainy and Lake Superior Basins). Comments by the Minnesota Center for Environmental Advocacy to the Minnesota Board of Water and Soil Resources speak to this point:

> "Thousands of acres of high-quality wetlands are threatened by current and proposed mining Projects and the mitigation proposals identified to date will not replace the functional wetland values that will be lost. MCEA is not convinced that sufficient efforts have been made to avoid or minimize these impacts, nor is MCEA convinced that there are few if any valuable mitigation opportunities left in NE Minnesota. In our view, the goal of this process should be to preserve the functional values of wetlands with the Lake Superior and Rainy River watershed, and MCEA's primary concern is that the agencies are too ready to sacrifice those values to raise revenue for unrelated Projects in other parts of the state."

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[160] Quinty, F., Rochefort, L., Peatland Restoration Guide.
[161] GLIFWC letter to Michael Jimenez, Re: Wetland Ecosystem valuation assessment of the NorthMet mine site, October 14, 2015.
[162] FEIS Appendix C. Tribal Cooperating Agencies Cumulative Effects Analysis, NorthMet Mining Project and Land Exchange. Sept. 2013.

> "...As estimated by the NE Mitigation Siting Team, 2,850 acres of wetlands are projected to be impacted by mining activities in the next twenty years. While this is a significant acreage of wetlands to provide mitigation for, the *Northeast Minnesota Wetland Mitigation Inventory & Assessment Phase II: Final Assessment Report* ("Phase II Report") states, "[c]onsidering the 11 to 61 percent range of landowner interest...the total likely available, high potential credit identified by the GIS analysis and field verification ranges from approximately 4,950 credits to 27,400 credits." Even under the lowest estimate of the Phase II Report, there are enough available credits in the NE to cover the proposed need for credits from mining activity. Further minimization of wetland impacts through improved stockpile, tailings basin and mining road designs could reduce the credit demand even further."[163]

The USACE and DNR are active participants in the IRT, and are well aware of the mitigation potential within the St. Louis River watershed. In fact, EPA Region 5 has been an active participant in the process to identify potential mitigation sites within northeastern Minnesota.[164]

There is a defined hierarchy for determining the appropriate type and location of wetland mitigation:[165]

1. Credits at a mitigation bank
2. In-lieu fee program credits
3. Permittee-responsible mitigation using a watershed approach
4. Permittee-responsible mitigation through on-site- and in-kind mitigation
5. Permittee-responsible mitigation through off-site and/or out-of-kind mitigation

The 2008 Federal Mitigation Rule also states that mitigation sites should be located in within the same watershed as the impact site, and where they are most likely to successfully replace lost functions and services.[166] The Corps is required to "use a watershed approach to establish compensatory mitigation in their permits to the extent appropriate and practicable."[167] In fact, adhering to the watershed approach in approving compensatory mitigation sites is the *only* exception to the requirement for in-kind mitigation (§332.3(e)(2)).

Although the Corps has some discretion in establishing compensatory mitigation, it must systematically consider options in the prescribed order. And although out-of-watershed mitigation can be permitted, its appropriateness is usually considered at the scale of either 8-digit or 6-digit Hydrologic Unit Codes (HUCs). In the case of the NorthMet Proposed Project, PolyMet is proposing that two-thirds of its mitigation will occur outside the major continental drainage divide, within **a different 2-digit HUC scale, and based upon the lowest tier of compensatory mitigation types in the hierarchy**.

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[163] MCEA *Comments on the Wetland Mitigation Strategy for Northeast Minnesota,* December 23, 2013.
[164] *See, Northeastern Minnesota Compensation Siting: Alternative Wetland Mitigation Options,* August 2015, prepared by TetraTech in support of EPA Contract Number EP-BPA-13-R5-001.
[165] 33 CFR 332.3 (b)(2-6).
[166] 33 CFR 332.3 (b)(1).
[167] 33 CFR 332.3 (c).

The Band objects to the issuance of a §404 permit, and the approval of any out-of-watershed mitigation credits or restoration for impacts to irreplaceable high quality aquatic resources of national importance, which include all remaining unimpacted wetlands within the St. Louis River watershed/Lake Superior Basin. The federal rule is clear that non-issuance of a permit is a possible decisional outcome:

> *During the 404(b)(1) Guidelines compliance analysis, the district engineer may determine that a DA (Department of the Army) permit for the proposed activity cannot be issued because of the lack of appropriate and practicable compensatory mitigation options. (§332.1(a)(3))*

However, given the Corps' approval of an inadequate and inappropriate compensation plan, and failure to conduct an adequate and comprehensive alternatives analysis or identify a Least Damaging Practicable Alternative (LEDPA), the EPA should elevate the permit under CWA §404(c). The same inadequacies that EPA identified in the 2009 DEIS and the 2013 SDEIS remain in this FEIS, and the NorthMet Proposed Project does not meet regulatory requirements for a permit.

K. Improper substitution of vague plans on adaptive management in lieu of science-based analysis of the potential impacts of the Project.

The Co-lead Agencies have declined to undertake the studies that could be done to better determine the potential impacts of the Project, or to correct errors in the data used in the models that were applied. Instead, they take the position that the potential adverse impacts can be addressed by "adaptive management" – meaning that after the mine is approved and in operation, monitoring would be done to determine potential adverse impacts, and if such were to occur, then future mitigation measures would be identified, developed and implemented on an as-needed basis. For example, as had been stated in the June 2015 PFEIS,

> *Several decisions were made while setting up the GoldSim models. An approach was taken not to represent in those models the interactions between bedrock groundwater and surficial deposits groundwater, or between groundwater and wetlands. Instead, an extensive monitoring was proposed during mine operations and closure to assess if such interactions occur and if they would raise concerns for permitting agencies. If monitoring data indicate trends toward permit non-compliance, adaptive mitigation measures would be implemented to prevent or eliminate what is expected to be a small transport-related bedrock impact relative to surficial flows.*

PFEIS 5-53. This approach was carried forward in the FEIS, although the FEIS revises the discussion so that it is less candid and less transparent about the decisions made not to undertake certain analyses. *See* FEIS at 5-55.

Adaptive management is similarly proposed as the way to address the post-closure northward flow of water from the mine to the Rainy River Basin. The Co-lead agencies have opted for after-the-fact adaptive management, even though a defensible, site specific groundwater model, based on a consistent conceptualization of the site hydrology and correct post-closure pit water levels *could* be used to determine the site hydrology and predict impacts of northward flow.

And rather than undertake hydrologic modeling to determine indirect effects of the mine on wetlands, the FEIS does no analysis at all, but instead relies on adaptive management. The only analysis done was to determine "where monitoring should take place for those areas that were identified as having a potential for indirect wetland effects." FEIS at 5-257. But a site specific MODFLOW model that incorporates existing information could provide reasonable estimates of the potentiometric surface (water table). *See* GLIFWC Comments of August 11, 2015.

These are improper uses of adaptive management. "Before one brings about a potentially significant and irreversible change to the environment, an EIS must be prepared that sufficiently explores the intensity of the environmental effects it acknowledges. . . . [T]he "hard look" must be taken before, not after, the environmentally-threatening actions are put into effect." *Nat'l Parks & Conservation Ass'n v. Babbitt*, 241 F.3d 722, 733 (9th Cir. 2001). Mitigation cannot be used as a proxy for studies that would provide actual baseline data. *N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1084 (9th Cir. 2011). "[M]itigation measures, while necessary, are not alone sufficient to meet the Board's NEPA obligations to determine the projected extent of the environmental harm to enumerated resources *before* a project is approved. Mitigation measures may help alleviate impact *after* construction, but do not help to evaluate and understand the impact before construction." *Id.* Indeed, as stated by the EPA, adaptive management "is not a substitute for adequate testing up front, which can influence mine design." Letter from EPA Region IX, re *Genesis Mine Project Draft Environmental Impact Statement (EIS), Elko County, Nevada, CEQ# 20100154* (August 6, 2010). An adaptive management plan "should not be used as a substitute for a thorough and adequate analysis conducted pursuant to the National Environmental Policy Act (NEPA) where information needed for the analysis can reasonably be obtained prior to completion of the environmental impact statement." *Id.* That is precisely the case here. The information needed to conduct proper testing was and is available and should have been used.

Furthermore, the adaptive management plan in the FEIS is, in and of itself, inadequate. An adaptive management plan, to be effective should include: clearly defined monitoring and reporting protocols; specific action criteria/triggers; detailed mitigation measures the effectiveness of which have been evaluated; management requirements and decision tree; identity of technical advisors and decision-makers; and financial assurance for entire plan, including contingencies. The "adaptive management plans" for hydrological characterization of the site, for indirect wetlands impacts, and other potential Project impacts, contain none of these elements.

The failure to evaluate the effectiveness of mitigation plans renders the plan inadequate. "An essential component of a reasonably complete mitigation discussion is an assessment of whether the proposed mitigation measures can be effective." *S. Fork Band Council of W. Shoshone of Nevada v. U.S. Dep't of Interior*, 588 F.3d 718, 727 (9th Cir. 2009). "A mere listing of mitigation measures is insufficient to qualify as the reasoned discussion required by NEPA." *Neighbors of Cuddy Mountain v. U.S. Forest Serv.,* 137 F.3d 1372, 1380 (9th Cir.1998) (disapproving an EIS that lacked an assessment of the effectiveness of the potential mitigation measures); compare *Okanogan Highlands Alliance v. Williams,* 236 F.3d 468, 477 (9th Cir.2000) (where an EIS was upheld as "[e]ach mitigating process was evaluated separately and given an effectiveness rating.'") "The Supreme Court has required a mitigation discussion precisely for the purpose of evaluating whether anticipated environmental impacts can be avoided," *S. Fork Band,* 588 F.3d at 727, but "a mitigation discussion without at least *some* evaluation of

effectiveness is useless in making that determination." *Id.* As a result, where the EIS said nothing "about whether the anticipated harms could be avoided by *any* of the listed mitigation measures" the court found the discussion inadequate. *Id.*; *see also Nat'l Trust for Historic Pres. v. Suazo*, No. CV-13-01973-PHX-DGC, 2015 WL 1432632, at *11 (D. Ariz. Mar. 27, 2015); *Syskiyou Regional Educ Project v Rose*, 87 F Supp 2d 1074, 1101-1102 (D Or. 1999) (even in the context of an EA, a proposed amended Forest Service plan that would allow mining did not satisfy NEPA where it did not analyze the mitigation measures in detail, did not explain how effective the mitigation measures would be, and did not have any analytical data to support the mitigation measures.); *Ohio Valley Environmental Coalition v. Hurst*, 604 F. Supp. 2d 860, 888-891 (S.D. W. Va. 2009) ("'mere listing' of mitigation measures and processes, with any analysis, cannot support a cumulative effects determination . . . Corps' reliance on generic mitigation measures . . . cannot support a conclusion that the Corps took a 'hard look.'")

L. Inadequate analysis of impacts to the 1854 Ceded Territory and the Band's treaty rights.

While the FEIS correctly recognizes that the Band holds treaty-reserved rights to hunt, fish and gather in the area where the proposed mine would be located,[168] the FEIS does not give proper consideration to the adverse impacts that the proposed mine would have on those federally-protected rights or the government's trust responsibility with regard to those rights.[169]

1. The meaning of the 1854 treaty right.

In the Treaty of September 30, 1854, 10 Stat. 1109, the Chippewa of Lake Superior, including the Band, ceded to the United States a large portion of the Chippewa's aboriginal territory in northeastern Minnesota. Article 2 of the 1854 Treaty set aside certain lands which were to serve as the permanent homes of the Lake Superior Bands. The reservation established for the Fond du Lac Band lies within the territory ceded by the 1854 Treaty, *United States v. Bresette*, 761 F. Supp. 658, 660 (D. Minn. 1991), and has remained the home of the Fond du Lac Band since the time of the Treaty. Because the small reservations established for the Chippewa under the Treaty were not alone sufficient to enable the Chippewa to sustain themselves, the 1854 Treaty also reserved to the Chippewa the right to hunt, fish,

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[168] FEIS ES-40, 4-4, 4-9, 4-333, 4-355 - 4-366, The FEIS includes an extensive list of the natural resources harvested by the Bands, see FEIS at4-358-359. The FEIS, however, then states that "the 1854 Treaty resources can be more accurately characterized by examining how they are being currently regulated by the Bands. " FEIS 4-359. The FEIS then appears to focus on the resources regulated in the Tribal Codes to assess impacts. But to the extent that the FEIS uses the Codes to determine what resources are harvested by Band members, it incorrectly and too narrowly reads the Codes. The Codes regulate the harvesting activities where such is necessary for conservation of the resource or public safety. The Codes, however, make clear that Band members may engage in certain activities, such as wild plant gathering, without the need for a special permit, subject to exceptions for those plants that warrant greater regulation. See Fond du Lac Band 1854 Ceded Territory Conservation Code, section 112, subd 1(A), *available at* http://www.fdlrez.com/government/ords/02-92ord011613.pdf. Thus, the range of wild plants which may be gathered by Band members exercising 1854 treaty rights is far more extensive than the plants which are subject to special regulations in the Code.

[169] FEIS 5-556- 5-573.

and gather on the lands ceded by the Treaty. Article 11 of the 1854 Treaty reserved these rights in the following terms: "And such of them as reside in the territory hereby ceded, shall have the right to hunt and fish therein, until otherwise ordered by the President."

Thus, the 1854 Treaty established for the Fond du Lac Band a permanent home, as well as the right to live by hunting, fishing and gathering on lands ceded by the Treaty. The usufructuary rights reserved under the 1854 Treaty have been recognized and given effect by the federal courts, *Fond du Lac Band of Chippewa Indians v. Carlson*, Civ. No. 5–92–159 (D. Minn., Mar. 18, 1996); *Bresette*, 761 F. Supp. at 661-662; *see also Lac Courte Oreilles v. Voigt*, 700 F.2d 341, 365 (7th Cir.), *cert. denied*, 464 U.S. 805 (1983).

Hunting, fishing, trapping and gathering remain an important source of subsistence, cultural and religious practices for members of the Fond du Lac Band. Natural resources form the cornerstone of Chippewa tradition. Fish, game, and plants like wild rice are vital to meeting the needs of many Band members for food. Plants and animals are also relied upon to provide medicines and to meet ceremonial and religious needs that define unique aspects of Chippewa culture.

The rights to hunt, fish and gather over the territory ceded were essential terms of the Treaty. Such reserved rights, founded on immemorial custom and practice, were "not much less necessary to the existence of the Indians than the atmosphere they breathed." *United States v. Winans*, 198 U.S. 371, 381 (1905); *New Mexico v. Mescalero Apache Tribe*, 462 U.S. 324, 337 n. 19 (1983). Usufructuary rights reserved by treaty were "part of larger rights possessed by the Indians, upon the exercise of which there was not a shadow of impediment..." *Winans*, 198 U.S. at 381. The cession of certain rights did not affect those not ceded, for "the treaty was not a grant of rights to the Indians, but a grant of rights from them, - a reservation of those not granted." *Id.; see also Winters v. United States*, 207 U.S. 564, 576-77 (1908) (holding that Indian water rights are reserved by treaty, not because these rights were expressly reserved, but because they were not included in the cession).

These rights do not consist merely of a right to take game, or fish or birds under the same conditions and to the same extent as other inhabitants of the territory. As the Supreme Court made clear more than a century ago, such a construction of the treaty would be "an impotent outcome to negotiations and a convention which seemed to promise more, and give the word of the nation for more." *Winans*, 198 U.S. at 380; *see also Antoine v. Washington*, 420 U.S. 194, 206 (1975); *Washington v. Fishing Vessel Ass'n*, 443 U.S. 658, 679-81 (1979). Rather, as the Court held, the Treaties "must be construed . . . in the sense in which they would naturally be understood by the Indians." *Fishing Vessel,* 443 U.S. at 676; *Winans*, 198 U.S. at 380. "[I]t cannot be supposed that the Indians were alert to exclude by formal words every inference which might militate against . . . them." *Winters*, 207 U.S. at 577. The courts accordingly look "beyond the written words to the larger context that frames the Treaty, including the history of the treaty, the negotiations, and the practical construction adopted by the parties." *Minnesota v. Mille Lacs Band of Chippewa Indians*, 526 U.S. 172,196 (1999) (internal quotations omitted). The rights reserved in Indian treaties are to be liberally construed in the manner in which the Indians understood them. *See, e.g., Fishing Vessel Ass'n.*, 443 U.S. at 675-6; *Antoine*, 420 U.S. at 199-200; *Menominee Tribe v. United States,* 391 U.S. 404, 406 n.2 (1968); *Tulee v. Washington*, 315 U.S. 681, 684-5 (1942).

Further, the exercise of these rights requires access to natural resources that are not contaminated. *See Michigan v. U.S. EPA,* 581 F.3d 524, 525 (7th Cir. 2009). (recognizing that a tribe's "cultural and religious traditions … often require the use of pure natural resources derived from a clean environment."). treaty rights, environmental health, and tribal culture are all interconnected. Populations with unique connections to the natural environment, such as Indian tribes, experience impacts that are too often overlooked. The EPA recognized this in its *Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses* (1998): "[A]s a result of particular cultural practices, that population may experience disproportionately high and adverse effects. For example, the construction of a new treatment plant that will discharge to a river or stream used by subsistence anglers may affect that portion of the population. Also, potential effects to on-or off-reservation tribal resources (e.g., treaty-protected resources, cultural resources and/or sacred sites) may disproportionately affect the local Native American community and implicate the federal trust responsibility to tribes. *See Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses*, §2.1.1 (footnote omitted) *available at* http://www3.epa.gov/environmentaljustice/resources/policy/ej_guidance_nepa_epa0498.pdf.

2. The federal government's trust responsibility to protect the treaty right.

The United States, by the treaties, assumed obligations to protect the Tribes and the rights that the Tribes retained under those treaties. These obligations arise from the treaties themselves as well as the trust responsibility which the federal government holds to Indian people. "[T]he undisputed existence of a general trust relationship between the United States and the Indian people," *United States v. Mitchell,* 463 U.S. 206, 225 (1983), imposes a fiduciary duty in conducting "any Federal government action" which relates to Indian Tribes." *Nance v. E.P.A.*, 645 F.2d 701, 711 (9th Cir. 1981). These duties apply to all federal agencies. *Id; see also Covelo Indian Cmty. v. F.E.R.C.*, 895 F.2d 581, 586 (9th Cir. 1990); *HRI, Inc. v. E.P.A.*, 198 F.3d 1224, 1246 (10th Cir. 2000; *Muckleshoot Indian Tribe v. Hall*, 698 F. Supp. 1504, 1523 (W.D. Wash. 1988) (granting an injunction against the construction of a marina in consideration of the effect upon Indian treaty rights).

As the Ninth Circuit held in *Covelo Indian Community*, federal agencies must strictly adhere to the ordinary duties of a private fiduciary when their actions impact Indian rights. 895 F.2d at 586; *accord*: *Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation v. Board of Oil and Gas Conservation*, 792 F.2d 782, 794 (9th Cir. 1986) (applying "the same trust principles that govern the conduct of private fiduciaries" to Department's authority over mineral royalties); *Coast Indian Community v. United States*, 213 Ct. Cl. 129, 550 F.2d 639 (1977); *Cheyenne-Arapahoe Tribes v. United States*, 206 Ct. Cl. 340 512 F.2d 1390 (1975); *Menominee Tribe v. United States*, 101 Ct. Cl. 10, 18-19 (1944); *Navajo Tribe v. United States*, 364 F.2d 320, 322-24 (Ct. Cl. 1966).

The standard which must be met is high. The courts have held that in discharging the trust responsibility, executive officials of the United States must observe "obligations of the highest responsibility and trust" and "the most exacting fiduciary standards," *Seminole Nation v. United States*, 316 U.S. 286, 296-97 (1942), and are bound "by every moral and equitable consideration to discharge its trust with good faith and fairness." *United States v. Payne*, 264 U.S. 446, 448 (1924).

This means that federal agencies must administer their own programs and activities in a manner that avoids adverse impacts on Indian rights. This trust duty is illustrated by the decision in *Pyramid Lake Paiute Tribe v. Morton*, 354 F. Supp. 252 (D.D.C. 1972), in which the court enjoined diversions of water for a federal reclamation project which adversely affected a lake located downstream of the project on the Pyramid Lake Paiute Tribe's Reservation. The Tribe's members lived on the shores of the lake and fished its waters for food. *Id.* at 254. Although the diversions violated no specific statute or treaty, the court held them in violation of the trust responsibility. *Id.* at 256. The court held that the Secretary of the Interior – as trustee for the Indians – was obliged to discharge his potentially conflicting duty to administer reclamation statutes in a manner which does not interfere with Indian rights. The court restrained the diversions because the Secretary's activities failed "to demonstrate an adequate recognition of his fiduciary duty to the Tribe." The court ruled that in order to fulfill his duties as trustee, the Secretary of the Interior was obliged to insure that all water not obligated by court decree or contract with the project go to Pyramid Lake. *Id.* Thus, the court held that the Indians' rights were a legal limit on executive agency action, not simply a factor to consider or to subordinate to other interests as a judgment call.

The federal government's substantive duty to protect "to the fullest extent possible" the Tribes' treaty rights, and the resources on which those rights depend has been repeatedly recognized. For example, in *Klamath Tribes v. United States*, No. 96-381-HA, 1996 WL 924509, at *8 (D. Or. Oct. 2, 1996), the tribe succeeded in stopping timber sales planned by the U.S. Forest Service on forest lands that supported treaty deer because, as the court found, the government had a "substantive duty to protect 'to the fullest extent possible' the Tribes' treaty rights, and the resources on which those rights depend." In *Parravano v. Babbitt*, 70 F.3d 539, 547 (9th Cir. 1995), the Court of Appeals upheld emergency federal regulations that limited non-Indian ocean fishing in order to protect the tribe's treaty fishing rights. As the court stated, "the Tribes' federally reserved fishing rights are accompanied by a corresponding duty on the part of the government to preserve those rights." *Id. See also Kittitas Reclamation Dist. v. Sunnyside Valley Irrig. Dist.,* 763 F.2d 1032, 1033-34 (9th Cir. 1985) (protecting tribe's treaty fishing rights by enjoining water withdrawals that would destroy salmon eggs before they could hatch); *Colville Confederated Tribes v. Walton*, 647 F .2d 42, 47-48 (9th Cir. 1981) (ruling for the tribe and federal government to imply a reservation of water to preserve tribe's replacement fishing grounds); *No Oilport! v. Carter*, 520 F. Supp. 334, 371 (W.D.Wash.1981)(finding that the federal trust responsibility required consideration of whether potential oil pipeline posed threat to treaty fishing rights); *Confederated Tribes of the Umatilla Indian Reservation v. Alexander,* 440 F. Supp. 553 (D. Or. 1977) (construction of a dam that would destroy tribal fishing grounds could not proceed absent express congressional authorization).

The Army Corps of Engineers has recognized that its actions are subject to the federal trust responsibility. The Corps' Tribal Consultation Policy states that: "There are responsibilities to Tribes resulting from the Federal Trust Doctrine, as well as from Treaties, statutes, regulations, Executive Orders and agreements between the United States government and tribal governments." US Army Corps of Engineers, *Tribal Consultation Policy and Related Documents* (2013).[170] The Corps' Tribal Consultation policy further recites that: "[t]he federal government has a unique legal and political

[170] Available at http://www.usace.army.mil/Portals/2/docs/civilworks/tribal/CoP/2013_nap_brochure.pdf.

relationship with Tribal governments that recognizes self-government and self-determination;" "USACE will ensure that it addresses Tribal concerns regarding protected tribal resources, tribal rights (including treaty rights) and Indian lands;" and "the Trust responsibility will be honored and fulfilled." *Id.* at 2-3.

The Corps' policies also incorporate and continue to rely on the requirements set out in the Department of Defense's October 1998 *American Indian and Alaska Native Policy.*[171] This policy reiterates that "[u]nder the federal trust doctrine, the United States--and individual agencies of the federal government--owe a fiduciary duty to Indian tribes" and gives effect to the trust responsibility by directing that "[w]here agency actions may affect Indian lands or off-reservation treaty rights, the trust duty includes a substantive duty to protect these lands and treaty rights 'to the fullest extent possible.'" 1998 DOD *American Indian and Alaska Native Policy* at page 3 n. (g). The Department of Defense further expressed its commitment to "[u]ndertaking DoD actions and managing DoD lands consistent with the conservation of protected tribal resources and in recognition of Indian treaty rights to fish, hunt, and gather resources at both on- and off-reservation locations." As there stated, "[f]ulfillment of the trust responsibility demands that federal agencies protect the lands and habitats that support the resources upon which the meaningful exercise of tribal hunting, fishing, and gathering rights depend. This includes actions on non-Indian owned lands (including DoD installations) that may affect Indian lands or off-reservation treaty rights (such as reserved rights to hunt, fish, or gather on treaty-ceded lands or 'usual and accustomed' grounds and stations)."

The Corps has given effect to these principles and has denied permit applications where the proposed development would have infringed on the off-reservation treaty fishing rights of a tribe, and its decision to do so was upheld. *Nw. Sea Farms, Inc. v. U.S. Army Corps of Engineers,* 931 F. Supp. 1515, 1519-20 (W.D. Wash. 1996). The court found that the trust responsibility imposes "a fiduciary duty" with respect to "'any Federal government action' which relates to Indian Tribes.'" *Id.* at 1519 (quoting *Nance v. Environmental Protection Agency*, 645 F. 2d at 711). The court further held that the trust responsibility applies to the Corps' permitting proceedings, and pursuant to *Heckler v. Cheney*, 470 U.S. 821 (1985), constitutes law to apply under the Administrative Procedure Act. *Id.* at 1520. The court went on to hold that, "[i]n carrying out its fiduciary duty, it is the government's, and subsequently the Corps', responsibility to ensure that Indian treaty rights are given full effect." *Id.* (citing *Seminole* Nation, 316 at 296-97). On the merits, the court held the Corps had properly denied the permit on the ground that the activities for which a permit was sought would interfere with the Tribe's treaty rights. *Id.* at 1520-22.

The U.S. Forest Service has likewise recognized its trust responsibility to tribes and the importance of protecting tribal off-reservation treaty rights to hunt, fish and gather. The *Forest Service Manual's* (F.S.M.) declaration of objectives with respect to American Indian and Alaska Native relations requires that that the Service operate its programs and make decisions in such a manner as to "ensure that Forest Service officials, programs, and activities respect tribal self-government and sovereignty and honor tribal rights and interests." F.S.M. § 1563.02(2).[172] The same Manual declares that it is the policy of the Forest Service to undertake these programs and activities "consistent with and respecting Indian treaty rights and fulfilling the Federal Government's legally mandated trust responsibility with Tribes,"

[171] Available at http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/DoDPolicy.pdf.
[172] Available at http://www.fs.fed.us/spf/tribalrelations/authorities.shtml.

F.S.M. § 1563.03(3), and commits the Service to administering "lands subject to off-reservation treaty rights in a manner that protects Tribes' rights and interests in the resources reserved under treaty." F.S.M.§ 1563.01(d).

The protection of treaty rights is further confirmed in the Forest Management Plan for the Superior National Forest. [173] It recognizes that "[l]ands within the Forest serve to help sustain American Indians' way of life, cultural integrity, social cohesion, and economic well-being," D-TR-1, and expresses the Forest Service's commitment to "facilitate[] the exercise of the right to hunt, fish and gather as retained by Ojibwe whose homelands were subject to treaty in 1854 and 1866 (10 Stat. 1109 and 14 Stat. 765). Ongoing opportunities for such use and constraints necessary for resource protection are determined in consultation with the following Ojibwe Bands: Fond du Lac, Grand Portage, and Bois Forte." D-TR-3.

EPA has long recognized the key role that the federal trust responsibility plays in the Agency's planning and decision-making process. Since 1984, EPA's *Policy for the Administration of Environmental Programs on Indian Reservations*[174] has declared that "EPA recognizes that a trust responsibility derives from the historic relationship between the Federal Government and Indian Tribes as expressed in certain treaties and Federal Indian law." The policy further states that "[i]n keeping with that trust responsibility, the Agency will endeavor to protect the environmental interests of Indian Tribes when carrying out its responsibilities that may affect the reservations." More recent policy declarations and Agency documents have reiterated this commitment to honoring the trust responsibility. One of the "guiding principles" of EPA's consultation policy is that "EPA recognizes the federal government's trust responsibility, which derives from the historical relationship between the federal government and Indian tribes as expressed in certain treaties and federal Indian law." *EPA Policy on Consultation and Coordination with Indian Tribes (2011).*[175]

Even more recently, EPA Administrator Gina McCarthy, in a memo to all EPA employees, expressly noted that "the United States' government-to-government relationship with and trust responsibility to federally recognized Indian tribes reinforces the importance of honoring [tribal] treaty rights. As such, the EPA has an obligation to honor and respect tribal rights and resources protected by treaties. While treaties do not expand the EPA' s authority, the EPA must ensure its actions do not conflict with tribal treaty rights. In addition, EPA programs should be implemented to enhance protection of tribal treaty rights and treaty-covered resources when we have discretion to do so." *Memorandum, Commemorating the 30th Anniversary of EPA's Indian Policy (December 1, 2014).*[176] And EPA is currently in the process of working with Indian tribes to provide specific Agency guidance regarding consultation and coordination with respect to treaty rights. *See, EPA Policy on Consultation and*

[173] Available at http://www.fs.usda.gov/detail/superior/landmanagement/planning/?cid=fsm91_049716.
[174] Available at http://www3.epa.gov/air/tribal/WETG/wetg2014/indian-policy_1984.pdf.
[175] Available at http://www.epa.gov/sites/production/files/2013-08/documents/cons-and-coord-with-indian-tribes-policy.pdf.
[176] Available at http://www.epa.gov/sites/production/files/2015-05/documents/indianpolicytreatyrightsmemo2014.pdf.

Coordination with Indian Tribes: DRAFT Guidance for Discussing Tribal Treaty Rights.[177]

3. Failure to properly assess the impacts of the proposed mine and land exchange on the treaty rights.

Although the Final EIS recognizes and discusses the Band's treaty rights and the federal government's trust responsibilities, the FEIS does not give proper effect to either the protection of the treaty right or the exercise of the trust responsibility.

(a) The treaty rights at the Project site.

The FEIS improperly limits its analysis of the impacts of the Project on the Bands' treaty rights to only the exercise of those rights within the Project area itself. With this artificially narrow construct, the FEIS then asserts, incorrectly, that "the NorthMet Project Proposed Action is not likely to have a significant impact on the overall availability of 1854 Treaty resources that are typically part of subsistence activities in the 1854 Ceded Territory." FEIS at 5-566.

There is no question that within the Project area, the proposed mine would destroy highly rated wetlands, mature timber lands, and related habitat where the mine, mine processing and transportation corridor will be built and operated. As discussed above, the direct impacts of the mining-related activities would permanently destroy 912.5 acres of wetlands, including 758.2 acres at the mine site, 147.1 at the plant site and 7.2 acres along the transportation and utility corridor. At the mine site itself, approximately 99 percent of the directly impacted wetlands are rated high quality. The proposed mine would further destroy 2000 acres of mature forest land.

But the FEIS analyzed the impact of the Project on the Bands' treaty rights under an improper test which it then applied in a manner that is contrary to the record. The FEIS states that because of the limited accessibility to the Project area, "there is likely limited present day or recent past subsistence gathering in the NorthMet Project area" and concludes that the proposed Project is therefore "unlikely to further diminish the exercise of 1854 treaty rights in the area." FEIS 5-569; *see also* FEIS at 5-572 (imposing this standard). The law says otherwise. Under well-settled law, denial of access to an area where treaty-rights are reserved does not "diminish" the treaty-reserved rights. *See Winans*, 198 U.S. at 381 (rejecting claims by a landowner who obtained a license to use a 'fish wheel' – a device capable of catching salmon by the ton and totally destroying a run of fish – of a right to exclude the Indians from their treaty-reserved "usual and accustomed" fishing areas); *see also Washington State Commercial Passenger Fishing Vessel Ass'n*, 443 U.S. at 684-85 ("property law concepts, devices such as the fish wheel, license fees, or general regulations" cannot be used to deprive the Indians of a fair share of the fish). Further, under the law, it is enough that the rights are reserved in the treaty to be entitled to protection. The notion, expressed in the FEIS, that the tribes somehow were required to prove "present day or recent past"[178] hunting, fishing or gathering activities on specific portions of the Project site in

[177] Available at http://www.epa.gov/sites/production/files/2015-09/documents/consultation-version-guidance-discussing-treaty-rights_0.pdf.

[178] FEIS at 5-569; see also FEIS at 5-572 (reiterating the incorrect view that "specific information concerning recent-historic subsistence use " and "contemporary subsistence activity at the Mine Site,

order to ensure that the natural resources on which the right depends are protected, is entirely without basis in the law.

But even if the formulation set out in the FEIS were the test, (although it isn't), the statement made is contrary to the record. As set out in detail in the comments provided by the Bois Forte Band, the oral testimony provided by Band members described the use of this area for gathering and hunting. Latady & Isham 2011. There is no dispute that the Spring Mine Lake Sugarbush lies within the area of potential effect of the proposed mine, and encompasses 80 acres of maple and basswood trees which may be up to 200 years old and have well documented evidence of Chippewa use for maple sugar making over an extensive period of time, including photographic evidence of Chippewa use in the 1940s. *See* FEIS 4-438. It is not only eligible for inclusion in the National Register of Historic Places, but is recognized as "being integral to traditional cultural practices and beliefs." *Id.* The Sugarbush is further located near to the Beaver Bay to Lake Vermilion Trail which passes through the Project area. This Trail is a major Chippewa trail (one of many) within a system of water and overland routes that crisscrossed northeastern Minnesota and extended to the border lakes long before the fur trade and continued to be used through the early 20th century. The FEIS recognizes that this trail is eligible for inclusion in the National Register of Historic Places, FEIS at 5-560, and "is significant for the role it played in the broad patterns of Ojibwe land use . . ." but "would be directly affected by the NorthMet Project Proposed Action, which would result in its permanent removal." FEIS at 5-565. Surely, as the Chippewa travelled on this trail and gathered sap at the Sugarbush, they engaged in other hunting, fishing and gathering activities in the areas that would have been essential to their survival. Latady & Isham confirm that this was the case.

Moreover, the discussion in the FEIS wholly ignores the critical role of the exercise of these treaty rights to Chippewa culture, tradition and religious practices. As the Bands explained in their July 2009 comments to the DEIS[179]:

> "Ojibwa economy from earliest recorded history to modern times rests upon hundreds of resources spread over a large area. Ojibwas found some resources close to the [White Pine] mine and traveled hundreds of miles for others. Hundreds of plant and animal species provided essential resources in their season."
>
> Any negative impact to tribal harvest of natural resources in a particular location is not simply a matter of inconvenience to the tribal member. It has significant cultural implications. A publication about the potential threats of sulfide mining discusses the importance of particular locations in Ojibwa culture.
>
> The Indian view of land sharpens the importance of maintaining the sustainability and environmental integrity of the relatively small land base left to the tribes. As

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Transportation and Utility Corridor, or Plant Site" were necessary to assess the impacts on the treaty-reserved rights.)

[179] PolyMet DEIS, Appx. D, p. 4.2-9, *available at* http://files.dnr.state.mn.us/input/environmentalreview/polymet/draft_eis/volume_iii_appendices_deis_10_19_09.pdf.

> distinguished from traditional European thinking, the general Indian orientation is more towards space than towards time. Thus the importance of a particular geographic spot can no more be moved to a different location than the importance in European history of a particular event can be moved to a different time. . . . Commonality of place, as much as of past, defines an Indian tribe. The ties that bind society and culture together are tethered to the earth. If a tribe's traditional lands lose the ability to support life, those ties can badly fray.
>
> In addition, the report entitled "*Cultural and Economic Importance of Natural Resources Near the White Pine Mine to The Lake Superior Ojibwa*" explains why damage to a particular resource or damage to a resource in a particular place, equates to cultural damage:
>
> > "The harvest of natural resources is not strictly an economic pursuit from the Ojibwa perspective. Ojibwa cosmology links all animate and inanimate inhabitants of the world in personalized relationships. The Anishinabeg (pl. of Anishinabe) treat many beings of the world as kin to humans who give themselves to humans for food, provide healing knowledge, or advise people about the events of their lives. Harvesting rice, venison, berries, maple sugar, and other resources become[s] a critical mechanism by which the Ojibwa perpetuate themselves physically and culturally and regenerate the natural cycle of life. Ojibwas' natural resource use patterns have changed since Americans came to Michigan and Wisconsin after 1820. Still, the Ojibwa cultural identity rests upon a person-to-person relationship with natural resources. . . The Ojibwa fear that processes used to extract metals from the earth threaten these resources".

Band comments on 2009 DEIS at 4.8-14 -15 quoting Great Lakes Indian Fish and Wildlife Commission, "*Cultural and Economic Importance of Natural Resources Near the White Pine Mine to The Lake Superior Ojibwa.*"

In short, under the law, and as supported by the record, the treaty right extends to the natural resources in the Project area. Those rights would be irreparably lost by the destruction of more than 900 acres of high-biodiversity wetlands, and 2000 acres of mature timberlands.

(b) The treaty rights outside the Project area.

The FEIS also incorrectly assumes that the loss of these critical areas will have no effect on natural resources outside the Project area itself. The land within the Project area serves as a vital habitat for a wide variety of resources. The land is an important wildlife corridor in a region that has otherwise been the subject of extensive iron ore mining. The history of mining in the region and the adverse environmental impacts from those mines have steadily reduced the Chippewas' access to critical resources from the natural environment which only serves to make these remaining areas – as well as the resources they contain – all the more valuable. Indeed, careful consideration of the impacts of a proposed project on habitat and wildlife corridors is required even where the proposed project would

not adversely affect treaty-protected rights. *See Marble Mountain Audobon Society v. Rice*, 914 F.2d 179, 182 (9th Cir. 1990) (EIS failed to fully consider the impact of a proposed timber sale on a biological corridor between two wilderness areas); *Oregon Natural Resources Council Fund v. Goodman,* 505 F.3d 884, 892 (9th Cir. 2007) (failure to consider the impact of the loss of 37 acres of a wildlife corridor on a sensitive specials, and failure to disclose methodology by which the conclusion was reached that the impact on the corridor was inconsequential was error).

That mining has occurred nearby does not lessen the importance of protecting these lands from degradation, but in fact heightens the importance of protecting them from use as a mine. This is true even in cases where the proposed project would not affect treaty-reserved rights, as illustrated by the EPA decision in *Final Determination of the U.S. Environmental Protection Agency Pursuant to § 404(c) of the Clean Water Act Concerning the Spruce No. 1 Mine, Logan County, West Virginia* (2011). While the proposed mine was located in an area that was already heavily mined, EPA found that this meant that greater protection needed to be accorded to the smaller number of streams that were not adversely affected by mining activity. In other words, the proposed mine's proximity to other mines was reason to accord greater protection to the habitat in the non-mined sites -- not less. *Id.* at 29-30; 47. EPA reasoned that the potentially affected streams "are some of the last remaining streams within the . . . subwatershed . . . that represent 'least-disturbed' conditions and habitat that is essential for many species in the watershed. As such, they perform critical hydrologic and biological functions, support diverse and productive biological communities, contribute to prevention of further degradation of downstream waters, and play an important role within the context of the overall Headwaters Spruce Fork sub-watershed and Coal River sub-basin." *Id.*at 49. EPA further found that the proposed mitigation measures (replacement of streams) would not effectively replace the loss of the high-quality and unique functions that the existing streams play in the ecosystem:

> While recognizing that the Project includes mitigation efforts (including stream creation and enhancement of existing streams) to compensate for unavoidable adverse impacts, EPA believes that known compensatory mitigation techniques will not replace the high quality resources of [the affected streams] . . . that will be impacted by the Project. Additionally, EPA believes that the current mitigation plan does not adequately account for the quality and function of the impacted resources.

Id. at 83-4. These principles have equal, if not greater force here. The important role that these lands play in providing habitat and corridors for game are critical to the Bands' ability to exercise their treaty-reserved rights, not solely on these lands, but in the region served by this corridor and within which the treaty rights are retained.

The adverse effect on the treaty rights is not mitigated by the lands to be provided through the land exchange. The FEIS improperly assumes that because 7,075 acres of land will be provided to replace the 6,495 acres of land that would be exchanged, that the Band's treaty rights are enhanced simply by virtue of the increase in net acres of land that will be administered by the Forest Service. FEIS 5-672. But a comparison of acreage, without consideration of the functional value of the lands that would be lost, is fundamentally flawed. The lands to be exchanged include 6,025 acres that have been designated by Minnesota as Sites of High Biodiversity Significance. FEIS 5-701. The ecological term 'biodiversity' equates to 'abundance' and 'subsistence' for the Bands. Of these, nearly 2,000 acres of coniferous bog

wetlands will be lost to the federal estate and therefore effectively to the Bands, if the Land Exchange Proposed Action is implemented. FEIS Table 5.3.4-1. This is significant because many tribally-harvested resources are only available in coniferous bogs (e.g. cranberries, soft-leaved blueberries, sweet flag), and mitigation for coniferous bogs is simply not feasible.

The site for the proposed mine also provides habitat for other species of importance to the Band – in particular moose. As the FEIS recognizes, the key habitat types considered moose habitat include "mature forest, grassland/brushland and aquatic environments," FEIS 5-439, all of which are present at the proposed mine site. The FEIS further recognizes that moose and their sign (tracks, droppings, browsing evidence etc") have been observed at the site. FEIS 5-439. The FEIS also recognizes that the population of moose in northeastern Minnesota has seen a severe decline in recent years the causes of which include habitat fragmentation and loss. *Id.* While measures to prevent that decline from continuing are the subject of on-going study by both the State and the Chippewa Bands, the FEIS simply announces without any supporting basis that the proposed mine (and its destruction of moose habitat at the proposed mine site) "would affect moose individuals in the vicinity through habitat loss and fragmentation, though not likely at the population level." *Id.* The FEIS provides no scientific support for its assertion that the loss of several thousand acres of moose habitat will not adversely affect the moose population.

Out of the lands to be provided to the federal estate in exchange for the lands at the NorthMet Project site, only 160 acres (Tract 4) include both the surface land and mineral rights. The rest of the proposed lands for exchange do not include the mineral rights, and because these lands would not be transferred under the Weeks Act, they would not carry the protections from later mining development afforded the current lands. Further, the lands to be provided are scattered sites, almost entirely located outside of the St Louis Watershed and therefore will neither provide the functions nor serve the critical ecosystem purposes that the lands which would be lost to the mine now serve. In sum, while the lands to be provided may increase total acreage of Forest Service lands, those lands will not provide the critical habitat – either now or possibly even in the future -- on which important and unique plants, fish and game depend. The exchange of thousands of acres of high quality wetlands and forests containing some of the few remaining wildlife corridors in northeastern Minnesota available to the Bands to exercise reserved 1854 treaty rights for lands that have moderate diversity is inconsistent with fiduciary responsibilities that are shared by all federal agencies. The loss of these lands will impair the Bands' treaty reserved rights.

In addition to the adverse effect that the loss of habitat on the Project site itself will have on the Bands' treaty rights, the many errors contained in the analysis of the Project's impacts discussed above mean that the Project will have adverse effects on the Bands' ability to exercise treaty-protected rights in a far larger portion of the 1854 Ceded Territory extending beyond the Project area itself, and could well include the Fond du Lac Band's on-reservation resources as well. Thus, although the FEIS assumes that "[e]ffects on the environment, including any from increased mercury, are all expected to meet the standards and regulations set forth by the appropriate state or federal agency or program," FEIS 5-573, the errors in water quality analysis undercut this assumption.

The potential adverse impacts on water quality illustrate this risk. The natural resources on which the Band depends have already been damaged by pollution. As discussed above, many of the waters that

would be affected by the Project and their fish have been significantly affected by toxic methyl mercury and are designated as impaired waters. Mercury contamination in these waters is of grave concern to Band members, who fish in them. The increasing methylmercury bioavailability in these watersheds is unacceptable because access to fish that can be safely consumed is an essential component of treaty resource harvest rights. The Band is equally concerned about the impact of increased sulfide levels on the viability of wild rice. Wild rice has been and continues to be a staple of Band members' diet and at the core of Chippewa culture. The continued loss of wild rice resources is an impermissible adverse impact on the rights reserved by Treaty.

M. Inadequate analysis of environmental justice issues.

The FEIS fails to properly consider issues of environmental justice.

In 1994, President Clinton issued E.O. 12898, which established the Environmental Justice Doctrine, amid growing concern that minority populations, low-income populations, and Indian tribes bear a disproportionate amount of adverse health and environmental effects. E.O. 12898 mandates, *inter alia*, that: "[E]ach federal agency shall make achieving environmental justice part of its mission by *identifying* and *addressing*, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." E.O. 12898 § 1-101 (emphasis added). The Executive Order provides for agencies to collect, maintain, and analyze information on patterns of subsistence consumption of fish, vegetation, or wildlife. Where an agency action may affect fish, vegetation, or wildlife, that agency action may also affect subsistence patterns of consumption and indicate the potential for disproportionately high and adverse human health or environmental effects on low-income populations, minority populations, and Indian tribes.

As the Interagency Working Group ("IWG") established by E.O. 12898 confirmed in its guidance on key terms in the Order, it applies to federal programs, policies and activities affecting Native Americans. *Council on Environmental Quality, Environmental Justice: Guidance Under the National Environmental Policy Act*, December 10, 1997 ("CEQ Guidance"), Appendix A at 25-26.[180] Similarly, the guidance released by the Council on Environmental Quality expressly incorporates Indian tribes into the definition of low-income populations and minority populations. *See, e.g.,* CEQ Guidance at 3-7.

Pursuant to E.O. 12898, the Corps, the Forest Service, and the EPA are obligated to identify and address any disproportionately high and adverse human health or environmental effects that the potentially affected tribes would suffer if the proposed mine were permitted. In addition, when environmental justice impacts may occur, the President's Memorandum accompanying E.O. 12898 requires that "[m]itigation matters outlined or analyzed in an environmental assessment, environmental impact statement, or record of decision, whenever feasible, should address significant and adverse environmental effects of proposed Federal actions on minority communities and low-income communities." Presidential Memorandum Accompanying Executive Order No. 12898, 30 Weekly Comp. Pres. Doc. 279 (Feb. 11, 1994).[181] The President's Memorandum further requires the federal agencies

[180] Available at http://www3.epa.gov/environmentaljustice/resources/policy/ej_guidance_nepa_ceq1297.pdf.
[181] Available at https://www.gpo.gov/fdsys/pkg/WCPD-1994-02-14/pdf/WCPD-1994-02-14-Pg276.pdf.

to identify "mitigation measures in consultation with affected communities." *Id.* In carrying on these responsibilities the CEQ Guidance directs that, "[a]gencies should seek tribal representation in the process in a manner that is consistent with the government-to-government relationship between the United States and tribal governments, the federal government's trust responsibility to federally-recognized tribes, and any treaty rights." CEQ Guidance at 9.

In determining the affected environment, the CEQ Guidance further provides that "[a]gencies should recognize that the impacts within minority populations, low-income populations, or Indian tribes may be different from impacts on the general population due to a community's distinct cultural practices. For example, data on different patterns of living, such as subsistence fish, vegetation, or wildlife consumption and the use of well water in rural communities may be relevant to the analysis." *Id.* at 14.

In addition to identifying proposed Federal actions with the potential to create disproportionately high and adverse human health or environmental effects, E.O. 12898 requires each Federal agency to determine whether the disproportionate effects of the proposed action will be borne by a minority population, low-income population, or Indian tribe. When determining whether environmental effects are disproportionately high and adverse, Federal agencies "are to consider the following three factors:"

> (a) Whether there is or will be an impact on the natural or physical environment that significantly. . . and adversely affects a minority population, low-income population, or *Indian tribe*. Such effects may include ecological, cultural, human health, economic, or social impacts on minority communities, low-income communities, or Indian tribes when those impacts are interrelated to impacts on the natural or physical environment; and
>
> (b) Whether environmental effects are significant. . . and are or may be having an adverse impact on minority populations, low-income populations, or *Indian tribes* that appreciably exceeds or is likely to appreciably exceed those on the general population or other appropriate comparison group; and
>
> (c) Whether the environmental effects occur or would occur in a minority population, low-income population, or *Indian tribe* affected by cumulative or multiple adverse exposures from environmental hazards.

Appendix A to CEQ Guidance at 26-27 (emphasis added). Federal agencies "are to consider" similar types of data in determining whether human health effects are disproportionately high and adverse. *Id.* at 26.

The CEQ Guidance further requires that, as environmentally preferable alternatives are considered, the disproportionately high and adverse human health or environmental effect on low-income populations, minority populations, or Indian tribes "should be a factor in determining the environmentally preferable alternative." CEQ Guidance at 15. Further "[i]n weighing this factor, the agency should consider the views it has received from the affected communities, and the magnitude of environmental impacts

associated with alternatives that have a less disproportionate and adverse effect on low-income populations, minority populations, or Indian tribes." *Id.* Likewise, mitigation measures "to avoid, mitigate, minimize, rectify, reduce, or eliminate the impact associated with a proposed agency action . . . should reflect the needs and preferences of affected low-income populations, minority populations, or Indian tribes to the extent practicable." *Id* at 16.

The analysis which E.O. 12898 and the CEQ Guidance requires is well illustrated by the Recommended Record of Decision of the District Commander, Norfolk Division, Army Corps of Engineers, Permit Application No. 93-0902-12 Submitted by the City of Newport News for the King William Reservoir Project on Cohoke Creek in King William County, Virginia (March 20, 2001) ("King William").[182] It is also illustrated by EPA decisions involving minority populations which depended on natural resources for subsistence and cultural practice who – in stark contrast to Indian tribes – did not have treaty-protected rights to engage in such activities. *See* Final Determination of the U.S. Environmental Protection Agency Pursuant to § 404(c) of the Clean Water Act Concerning the Spruce No. 1 Mine, Logan County, West Virginia (2011); Final Determination of the U.S. Environmental Protection Agency's Assistant Administrator for Water Pursuant to Section 404(c) of the Clean Water Act Concerning the Proposed Yazoo Backwater Area Pumps Project, Issaquena county, Mississippi (August 31, 2008).

The District Commander's recommended decision on the King William Reservoir Project addressed an application by the City to address an important public interest – the development of a reservoir "[t]o provide a dependable, long-term public water supply for the lower Virginia Peninsula." *King William* at 3. The proposed reservoir was to have been located in a rural area between two Indian reservations. *Id.* at 141, 146. The water that would be used to fill the reservoir was to have been withdrawn from the Mattaponi River, upstream from the Mattaponi Indian Reservation. Although not federally recognized, the Army Corps chose, for purposes of this Project, to treat the three tribes as if they were federally recognized. *Id.* at 146. The Corps found that the potentially affected waters and other areas were undeveloped and pristine, possessed great scenic beauty, and were environmentally fragile and sensitive to development. Pursuant to its duties under E.O. 12898, the District Commander subjected the Project to an Environmental Justice analysis. *Id.* at 139-148.

While the recommended decision indicated that an Environmental Justice analysis typically requires a statistical or census tract-based examination, in which the involved Federal agency collects population and census data to describe the race and income characteristics of the residents within the census subdivisions in and around the area of proposed action, which are then compared to those of the larger community which encompasses the entire impact foot print, *Id.* at 141, the District Commander found that a different Environmental Justice analysis is required where concentrations of isolated minority or low-income populations within the impact footprint could be missed despite their being unfairly impacted by the Project in a way the larger population is not. *Id.* at 142. Such an analysis was used in the recommended decision because the total population of the three tribes constituted only 2% of the

[182] *Available at* http://nepis.epa.gov/. Although the District Commander's recommended decision to deny the application for a section 404 permit was not followed by the Division which in 2005, decided to issue the section 404 permit, the decision to issue that permit was ultimately found to be arbitrary and capricious on a number of grounds. *See Alliance to Save the Mattaponi v. U.S. Army Corps of Engineers*, 606 F. Supp. 2d 121 (D.D.C. 2009).

entire county population, and thus may have escaped identification under a statistical Environmental Justice analysis. *Id.* The decision followed the EPA's *Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analysis*[183] which states that certain populations with unique connections to the natural environment may not be easily identified. Quoting from *EPA's Guidance*, the recommended decision states:

> "This can result due to the group's use of, or dependence on, potentially affected natural resources . . . [A]s a result of particular cultural practices, that population may experience disproportionately high and adverse effects. For example, the construction of a new treatment plant that will discharge to a river or stream used by subsistence anglers may affect that portion of the population. Also, potential effects to on- or off-reservation tribal resources (e.g., treaty-protected resources, cultural resources and/or sacred sites) may disproportionately affect the local Native American community and implicate the federal trust responsibility to tribes."

Id. (quoting *EPA's Guidance* at 13). Thus, disproportionate impacts to a native community or other population may occur as a result of that community's special historical, religious, economic, cultural, or other significant connection to the natural environment, as was the case with respect to the impacts of the proposed King William Reservoir.

Similarly, the recommended decision recognized that while the Environmental Justice analysis is typically concerned with disproportionate and adverse impacts suffered by minority or low-income populations caused by, for example, pollution or noise, the situation is different with regard to Native American communities: "[m]any of the impacts to the minority populations discussed [in the Decision] result from impacts to their cultural resources, as well as to natural resources they use in a manner that differs from the general population of the area." *Id.* Thus, Environmental Justice concerns were triggered regarding the Native American communities not only because of the natural resources potentially impacted by the reservoir, but because of the *cultural* resources potentially impacted by the project.

After considering a broad range of consequences likely to arise from the King William reservoir, the District Commander concluded that the project would have disproportionately high and adverse environmental effects on the tribes and their cultural resources. The recommended decision stated that if the permit for the King William Reservoir were granted:

- Construction of the proposed King William Reservoir project would have a combined impact on the natural and physical environment that has the potential to significantly and adversely affect the Mattaponi, the Upper Mattaponi and the Pamunkey Tribes;

- The adverse cultural, social, economic and ecological impacts to the Tribes are interrelated to the adverse impacts to the natural and physical environment

[183] Available at http://www3.epa.gov/environmentaljustice/resources/policy/ej_guidance_nepa_epa0498.pdf.

that would result from the proposed King William Reservoir project; and

- The additional environmental effects of the project would be significant and would or may have an adverse impact on the Tribes that appreciably exceeds or would likely appreciably exceed the effects on the general population.

Id. at 147. The recommended decision also stated that "[t]he magnitude of these effects is unknown, and cannot be accurately predicted, especially in conjunction with other projects that may follow." *Id.* As such, the District Commander decided that: "the potential socioeconomic, cultural, and spiritual losses that the Tribe would suffer as a result of the construction of the reservoir and the withdrawal of water from the Mattaponi River could not be adequately compensated." *Id.* Finally, the District Commander concluded that, "[t]he applicant has not demonstrated a sufficient need for the project and I have determined that other less environmentally damaging practicable alternatives to the proposed King William Reservoir are available . . . The adverse impacts would not be justified." *Id.* at 200.

EPA has applied a similar analysis in addressing environmental justice issues. Indeed, even in cases where the impact on the subsistence use of natural resources by a minority population was not protected by a treaty with the United States, the EPA found environmental justice concerns precluded development of the proposed Project.

One example is EPA's decision regarding a proposed mine in *Spruce No. 1 Mine* (2011).[184] Although the Corps considered the environmental justice issues and viewed the proposed mine as a means for providing jobs that might help the very low income community living in the region, EPA disagreed. EPA reasoned that "despite the economic benefits provided by coal extraction, coal-producing counties in Central Appalachia continue to have some of the highest poverty and unemployment rates in the region." *Id.* at 94. EPA further found that the mountains which would be affected by the proposed mine were both an important cultural resource for the region's low-income population, as well as a critical source of natural resources, including wild herbs. As EPA put it:

> In many cases the mountains have helped define their culture, and they are an integral part of their daily lives. For example, the mountain ridges of southern West Virginia have for over two centuries been viewed largely as a "commons", where local residents have gathered wild medicinal herbs such as American Ginseng (*Panax quinquefolius*) and Goldenseal (*Hydrastis canadensis*) (Hufford 2003). In many cases, collection of these wild herbs provides much needed extra income to local communities during times of unemployment or economic hardship (Bailey 1999). Removing these mountains may have profound cultural changes on the residents in the area, and so it is important that cultural impacts be considered as well.

Id. at 95.

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[184] *Final Determination of the U.S. Environmental Protection Agency Pursuant to § 404(c) of the Clean Water Act Concerning the Spruce No. 1 Mine, Logan County, West Virginia* (2011).

EPA's decision on the *Proposed Yazoo Backwater Area Pumps Project*[185] is similar. As EPA explained, the Corps had included a discussion of environmental justice, and the proposed Project sought to address important public interests in flood control and economic development through increased agricultural production. But EPA found that the environmental justice analysis did not accurately reflect the fact that the Project's benefits likely would not be realized by the low income and minority populations in the region, but would in fact adversely affect them. EPA pointed out that increased mechanization in agricultural development meant fewer small farms and decreasing employment opportunities. At the same time, the flood control Project would adversely affect the poor and minority residents of the region who relied on subsistence fishing and hunting "to supplement their food sources and income and can be classified as subsistence fishers and/or hunters." *Id.* at 67.

The FEIS here does not contain a proper analysis of the environmental justice impacts of the proposed mine as is required by Executive Order 12898 and the CEQ Environmental Justice Guidance. The Project here is not one intended to serve broad public interests or needs. It is not a reservoir that would provide stable public water supply, nor a public work needed to address flood control. It is a mine which is sought by a privately-owned company and intended, first and foremost, to generate profits for that company. While the Project may create jobs and generate tax revenues, those are the only potential benefits which may inure to the public (and may well be negated by the potential adverse environmental impacts of the Project).

The FEIS otherwise gives no meaningful consideration to the disproportionate impact that the Project would have on Indian people as is required by Executive Order 12898. Contrary to the CEQ Guidance, the FEIS, focuses on a simple recitation of census numbers and proportions of Native Americans in the regional and statewide populations. FEIS 5-590. While acknowledging that the Project has the potential to disproportionately affect the Chippewas' right to hunt, fish and gather in the area, the FEIS otherwise ignores those impacts, asserting only that the proposed land exchange would provide the Bands with access to other lands. FEIS 5-778 - 5-779. But for the reasons discussed above, the land to be exchanged does not mitigate the loss of these critical resources or their adverse impact on the exercise of the treaty rights.

More fundamentally, the proposed land exchange does nothing whatsoever to mitigate the disproportionate adverse effects on Indians who depend heavily on fish and wild rice from exposure to mercury and arsenic. The FEIS simply dismisses these concerns, commenting that "bioaccumulation of mercury in fish could affect Band members' willingness to rely on subsistence fishing as a contribution to household economies, as well as affect continuation of traditional fishing practices." FEIS 5-573. The FEIS suggests no alternatives that might have a less adverse environmental impact, nor any measure to mitigate the harm. Telling Indian people who hold treaty protected rights that they should stop fishing is not the kind of mitigation measure that environmental justice requires.

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[185] *Final Determination of the U.S. Environmental Protection Agency's Assistant Administrator for Water Pursuant to Section 404(c) of the Clean Water Act Concerning the Proposed Yazoo Backwater Area Pumps Project, Issaquena county, Mississippi* (August 31, 2008).

N. Inadequate analysis of socioeconomic impacts.

The FEIS's discussion of Socioeconomic impacts of the propose Project, §4.2.10 is deficient as it fails to consider, much less address, the value of ecosystem services as required by the Council on Environmental Quality,[186] as well as the Office of Management and Budget, and the Office of Science and Technology Policy.[187] Consideration of ecosystem service values has been required for plans and proposals that affect management of federal assets including National Forests, and are to be implemented to address a broader range of federal decision-making in the future. *Id.* at 1-5.

The objective of these Guidelines is to ensure that federal agencies, in making decisions on federal actions, take into account "vital contributions" that nature provides "to economic and social well-being that are often not traded in markets or fully considered in decisions." *Id.* at 4. These values, referred to as "ecosystem services," "include, but are not limited to, provisioning food and materials, improving the quality and moderating the quantity of water, providing wildlife habitat and spawning and nursery habitats for fisheries, enhancing climate resilience, mitigating storms and floods, buffering pollutants, providing greater resilience for communities and ecosystems, and supporting a wide array of cultural benefits, recreational opportunities, and aesthetic values." *Id.* at 2. As the October 2015 memorandum points out, development of methods to value ecosystem services has been underway since 1998, and that "the Federal government has made progress toward this goal within individual agencies – for example, in the U.S. Forest Service's 2012 Forest Planning Rule – and in setting broad policy across agencies-for example, by including ecosystem-services concepts in the recent Principles, Requirements and Guidelines for Federal Investment in Water Resources (PR&G)." *Id.*

The Principles, Requirements and Guidelines for Federal Investment in Water Resources issued in 2013 and 2014 (PR&G) apply "to a broad range of Federal investments that by purpose, either directly or indirectly, affect water quality or water quantity, including ecosystem restoration or land management activities," and extend to "proposals and plans that affect the management of federal assets including National Wildlife Refuges, National Parks, National Forests and National Grasslands" 2013 PR&G at 1, 2. Collectively, these require federal agencies to formulate viable alternatives to proposed federal actions and to incorporate ecosystem service analysis when assessing each alternative. 2014 PR&G at 21. A complete accounting identifies impacted ecosystem services, and where practicable, should quantify those impacts. The Principles further provide that "[w]hen it can be done well and it is appropriate to do so, quantified impacts should be monetized." 2014 PR&G at 22 (emphasis supplied).

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[186] Council on Environmental Quality, Principles and Requirements for Federal Investments in Water Resources 1 (March 2013), *available at* https://www.whitehouse.gov/sites/default/files/final_principles_and_requirements_march_2013.pdf.; Council on Environmental Quality, Interagency Guidelines 21 (2014), *available at* https://www.whitehouse.gov/sites/default/files/docs/prg_interagency_guidelines_12_2014.pdf.

[187] Office of Management and Budget, Council on Environmental Quality and Office Science and Technology Policy , Memorandum to all Executive Departments and Agencies, M-16-01, *Incorporating Ecosystem Services into Federal Decision Making*. (October 2015) available at https://www.whitehouse.gov/sites/default/files/omb/memoranda/2016/m-16-01.pdf.

Although consideration of ecosystem service values has been expressly required for the USFS, it is not addressed in the FEIS. As it became apparent to the Band that none of the Co-lead Agencies on the EIS was examining this issue, the Band, as a cooperating agency secured expert services to undertake the necessary study with grant funding from EPA. The study, entitled *The Value of Nature's Benefits in the St. Louis River Watershed*, was prepared by Earth Economics, a nonprofit organization with expertise in science-based ecological economic analysis. The study was completed in June 2015. The Band submitted this study to the Co-lead Agencies as work proceeded on the EIS, and, in the Band's August 2015 comments on the Preliminary Final EIS, the Band urged its consideration in the EIS. The FEIS, however, makes no mention at all of ecosystem service values. The failure to address ecosystem service values is another substantial deficiency in the FEIS.

The study addresses the ecosystem service values as required by the CEQ, OMB and OSTP. As the study explains:

> Natural capital is an essential asset to both economic development and quality of life (Liu et al., 2010). Trees and freshwater streams are examples of natural capital that are produced by ecosystems, or biological communities interacting with their physical environment. In turn, natural capital produces an abundance of goods and services that everyone uses. Historically, ecosystem services have been either not valued or greatly discounted in economic analyses, leading to a misconception of their fundamental role in our economy (Daly and Farley, 2004). We may receive these ecosystem services for free from the environment, but they are worth far more than that. . . .
>
> The benefits of ecosystem services are similar to the economic benefits typically valued in the economy, such as the services and outputs of skilled workers, buildings, and infrastructure. Some ecosystem goods and services can be valued similarly through marketplaces, such as fish, wild rice, and clean water. However, many ecosystem services are not amenable to marketplaces valuation, even though they provide vast economic value. For example, when the flood protection services of a watershed are lost, economic damages include job losses, infrastructure repairs, reconstruction costs, restoration costs, property damage, and death. Conversely, when investments are made to protect and support these services, local economies are more stable and less prone to the sudden need for burdensome expenditures on disaster mitigation efforts. In addition to the economic value associated with these avoided costs, healthy watersheds provide myriad other services including water supply, carbon sequestration, water filtration, and biodiversity. All of these services provide economic value regionally and beyond.[188]

Among the services provided by the ecosystems in the St Louis Watershed are: flood risk reduction, habitat for plants and animals which, in turn provides food as well as recreational opportunities and water quality protection. A fact sheet accompanying the report summarizes these:

- Flood Risk Reduction. Wetlands, grasslands, shrub, and forest all provide protection from

[188] Earth Economics, *The Value of Nature's Benefits in the St. Louis River Watershed* at viii (June 2015).

flooding. These ecosystems absorb, slow, and store large amounts of rainwater and runoff during storms. June 2012 saw record rainfall in the watershed, and along with an already-rainy spring, resulted in a 500-year flooding event that caused more than $100 million dollars in damage. Retaining natural, permeable land cover is important to reducing flood risk and damages caused by natural disasters.

- Habitat. Ecosystems provide habitat for plants and animals where they find shelter from predators, food, and appropriate living conditions for all their life stages. The St. Louis River watershed provides critical habitat to many species of plants and animals, such as wild rice, game animals, furbearers, waterfowl, bald eagles, walleye and sturgeon.

- Food. Natural ecosystems and managed lands both provide conditions for growing food. Crops, orchards, and pastures produce food for consumption, but so do natural areas like forests, lakes, rivers, and wetlands. Wild rice is a tremendously important food resource that is grown in the St. Louis River watershed, where individuals who hand- harvest wild rice typically gather more than 400 pounds each year.

- Water Quality. Ecosystems can remove a variety of pollutants and in many cases can naturally maintain the water quality conditions needed for potable water. More than one quarter of the entire St. Louis River watershed is wetland. Preserving these and restoring degraded or lost wetlands can help improve water quality conditions within the watershed.

The economists at Earth Economics then quantified the value of the ecosystem services in the watershed, using a conservative approach that underestimates the full value of the ecosystems in the watershed. As a result of their analysis, the economists determined that "[t]he St. Louis River watershed provides an estimated $5 billion to $14 billion in ecosystem service benefits per year."[189] They further found that "[t]aking a conservative approach and considering natural capital as a short-lived economic asset, like roads and bridges, the asset value of the watershed is between $273 billion and $687 billion over 140 years." *Id.* The study concludes that "[t]he landscape of natural capital and associated ecosystem services in the St. Louis River watershed is highly valuable and provides the foundation for the regional economy." *Id.*

These findings are important, but omitted, factors that should have been part of the FEIS.

O. Inadequate analysis of climate change impacts.

Climate change threatens the very territorial existence of tribes in the United States. Tribes, who often rely closely on their environments for legal, spiritual, cultural and subsistence reasons, have been particularly hard hit by the negative impacts of climate change.[190]

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[189] *Id.*

[190] Patricia Cochran, et al., Indigenous Peoples, Lands and Resources, *available at* http://nca2014.globalchange.gov/report/sectors/indigenous-peoples (last visited December 11, 2015).

The Band, in its comments on the 2009 DEIS and again in its comments on the 2013 SDEIS, has repeatedly requested that the lead agencies develop a comprehensive analysis of the Project's potential impacts on climate change beyond a greenhouse gas inventory. The FEIS fails to adequately address this critically important issue.

President Obama and every federal agency to consider the matter have expressed in no uncertain terms that measuring and accounting for the climate change effects of a given action should be taken into consideration. As President Obama recently said, when addressing world-leaders at the recent Paris Climate Change Conference, the "United States of America not only recognizes our role in creating this problem, we embrace our responsibility to do something about it." Remarks by President Obama at the First Session of COP21 (November 30, 2015).[191] Executive Orders, such as E.O. 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (October 5, 2009),[192] which directs federal agencies to develop sustainability strategies and reduce greenhouse gas emissions, and E.O. 13653, *Preparing the United States for the Impacts of Climate Change* (November 1, 2013), which directs agencies to develop, implement, and update comprehensive plans to integrate consideration of climate change risks into agency operations and mission objectives, further meld climate change considerations into the Nation's policy and planning.

And each of the agencies on this FEIS has policy commitments regarding climate change that directly relate to this action. The Forest Service, through its *Forest Service Climate Adaptation Plan* (2014),[193] has set the goal of taking "climate change into account" with regard to its "programs for public land management, private forest landowner assistance, and research," and to "reformulate" "current policies, procedures, and program guidance … where necessary to align resources with an effective climate change response and to more effectively collaborate with other Federal agencies, States, Tribes, and other stakeholders for landscape-scale conservation." *Id.* at 58. The Army Corps of Engineers has adopted the policy that it "shall continue to consider potential climate change impacts when undertaking long-term planning, setting priorities, and making decisions affecting its resources, programs, policies, and operations." United States Army Corps of Engineers, *Climate Preparedness and Resilience Policy Statement* (June 27, 2014).[194] And the EPA, through its *Policy Statement on Climate Change Adaptation*, has recognized that "[c]ertain parts of the population, such as . . . tribes and indigenous peoples . . . can be especially vulnerable to the impacts of climate change," and declared that "States, tribes, and local communities share responsibility for protecting human health and the environment, and partnerships with EPA are at the heart of the nation's environmental-protection system." United States Environmental Protection Agency, Policy Statement on Climate Change

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[191] Available at https://www.whitehouse.gov/the-press-office/2015/11/30/remarks-president-obama-first-session-cop21.
[192] Available at https://www.whitehouse.gov/the-press-office/president-obama-signs-executive-order-focused-federal-leadership-environmental-ener.
[193] Available at http://www.usda.gov/oce/climate_change/adaptation/USDA_Climate_Change_Adaptation_Plan_FULL.pdf.
[194] Available at http://www.corpsclimate.us/docs/USACE_Adaptation_Plan_Policy_2014Jun27_highres.pdf.

Adaptation (June 26, 2014).[195] Further, "EPA will encourage and support smarter, more climate-resilient investments by . . . tribes . . . by integrating climate-adaptation considerations into discretionary and nondiscretionary financial mechanisms that support . . . tribal . . . actions where climate change is recognized as relevant to the actions being undertaken." Id.

Inadequately addressing – or just ignoring – both the potential climate change impacts of the proposed mine, as well as the affects climate change might have on the mine's environmental impacts in the future, is directly contrary to these policies. Indeed, the CEQ has released revised draft guidance regarding climate change impacts and the NEPA process, *see Revised Draft Guidance for Greenhouse Gas Emissions and Climate Change Impacts* (December 18, 2014),[196] which although not yet final, confirms what Executive Orders and existing federal policies already require under the NEPA review process. As the Draft Guidance recognizes,

> Climate change is a fundamental environmental issue, and the relation of Federal actions to it falls squarely within NEPA's focus. Focused and effective consideration of climate change in NEPA reviews will allow agencies to improve the quality of their decisions. Environmental outcomes will be improved by identifying important interactions between a changing climate and the environmental impacts from a proposed action…

Id. at 2 (internal footnotes omitted). As further set out in the Draft Guidance, federal agencies should consider "the implications of climate change for the environmental effects of a proposed action," *Id.* at 3; *see also* 21 -25. Also, "the particular impacts of climate change on vulnerable communities" is relevant "in the design of the action or selection among alternatives." *Id.* at 24.

The Executive Orders, agency policies, and Draft Guidance all build on and confirm what the Court of Appeals for the Ninth Circuit required in 2008 – that federal agencies must assess carbon dioxide emissions *and other climate change impacts* in environmental review documents prepared under the National Environmental Policy Act (NEPA). The Court's unanimous decision in *Center for Biological Diversity v. National Highway Traffic Safety Administration* arose out of challenges to new automobile fuel efficiency standards for light trucks and SUVs developed by the National Highway Traffic Safety Administration (NHTSA).[197] The Court ordered NHTSA to prepare an EIS assessing carbon dioxide emissions attributable to the new standards, as well as the actual environmental effects associated with climate change. The Court stated:

> The fact that 'climate change is largely a global phenomenon that includes actions that are outside of [the agency's] control . . . does not release the agency from the duty of assessing the effects of *its* actions on global warming within the context of other actions that also affect global warming.' While NHTSA did the calculations necessary to

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[195] Available at http://www3.epa.gov/climatechange/Downloads/impacts-adaptation/adaptation-statement-2014.pdf.
[196] Available at https://www.whitehouse.gov/sites/default/files/docs/nepa_revised_draft_ghg_guidance_searchable.pdf.
[197] *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172 (9th Cir. 2008).

> determine how much extra carbon dioxide would be emitted, it failed completely to discuss in any detail the global warming phenomenon itself, or to explain the benchmark for its determination of insignificance in relation to that environmental danger.

The court faulted NHTSA for failing to "discuss the *actual* environmental effects" of the proposed standard, and directed the agency to "evaluate the 'incremental impact' that [those] emissions will have on climate change or on the environment more generally in light of other past, present, and reasonably foreseeable actions.

The Ninth Circuit's emphatic declaration that the "impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impact analysis that NEPA requires agencies to conduct," coupled with the more recent Executive Orders and federal climate change policies, clearly apply here. Agencies cannot avoid evaluating climate change impacts for a broad range of projects requiring federal approvals or permits. The Ninth Circuit's holding also suggests that simply quantifying emissions and comparing them to a baseline is insufficient. Instead, Project proponents should be required to evaluate the interplay between a Project's emissions, emissions attributable to other past and reasonably foreseeable future actions, and the actual environmental impacts attributable to climate change.

A proper climate change analysis for this proposed Project would illustrate the adverse impact that the loss of wetlands will have on climate change. In addition to the broadly recognized services that wetlands provide, they also store significant amounts of carbon. It has been estimated that wetlands (only about 6% of the world's terrestrial area) contain carbon equal to the total atmospheric carbon store (Intergovernmental Panel on Climate Change, Working Group 11: Impacts, Adaptation and Vulnerability, 5.8.1 (2001)). Much of the carbon stored in wetland soils and vegetation will be released if they are drained, and the release of carbon will exceed sequestration.

Yet despite elevating this issue repeatedly to the Co-lead agencies over the course of this environmental review process, the FEIS "analysis" of climate change impacts – all three paragraphs – fails to seriously evaluate Project impacts.[198] It gives a brief recitation of recent rulemaking on greenhouse gas emissions reductions, and then simply provides an estimate of Project direct and indirect GHG emissions. As with mercury, the FEIS claims:

> *…there are no analytical or modeling tools to reliably evaluate the incremental impact of a proposed action's discrete GHG emissions on the global and regional climate. In addition there are not analytical or modeling tools to reliably evaluate any cascading effects, or cumulative effects, from a particular proposed action's GHG emissions on natural ecosystems and human economic systems in a given state or region.*[199]

This claim is particularly galling, in light of the St. Louis River ecosystem services valuation study that the Band provided to the Co-lead agencies in June, which they chose to disregard. The study explicitly analyzed the carbon sequestration capacity for the land cover classes that were evaluated for the study,

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[198] FEIS 5-506.
[199] *Id.*

including forests and various wetland types. The headwaters region of the watershed is essentially a large peatland complex, representing a vast carbon sink; loss of peatlands equals a loss of an enormous sink in the region and the release of carbon to the atmosphere. Peatlands contain greater than 3X more carbon per hectare than other ecosystems,[200] and this important function (carbon storage) is so critical that its value is calculated separately from the other ecosystem services in the asset valuation. For the St. Louis River watershed, the carbon storage *alone* is valued between $56 billion and $95 billion[201]. The FEIS should have incorporated this information alongside the emissions estimate for a more comprehensive accounting of Project impacts. Additionally, the wetland mitigation proposed will not adequately compensate for this ecosystem service; simple acre-for-acre consideration fails to account for the disproportionate loss in carbon sequestration capacity from mature, intact peatlands.

A relatively simple response to climate change is prioritizing avoidance of wetland impacts. Wetlands store more carbon than any other ecosystem. Including carbon storage in the §404 permit avoidance and minimization sequencing through the 'least damaging practical alternative' evaluation would be a logical step towards reducing the regional carbon footprint. Carbon sequestration services provided by forested wetlands and peat bogs must be considered in the avoidance equation alongside mitigation.

The American Society of Wetland Managers climate change recommendations include:

- incorporating adaptations to climate change in water Projects to add safety factors for floods and erosion
- added ecosystem protection and adjustment goals reflecting anticipated climate changes such as low flow protection for fish and other wildlife.
- Add protection of wetland carbon stores as an explicit goal of the §404 permitting program
- require impact reduction and compensation
- Consider the impact of proposed activities on carbon stores in regulatory Permitting

The Minnesota Carbon Sequestration Project, an interdisciplinary research group, produced an assessment of the potential capacity for carbon sequestration in Minnesota's terrestrial ecosystems, on the request of the state legislature. After analyzing existing scientific literature, land use, and current state policies and programs on carbon sequestration potentials, they released a report in 2008 entitled *The Potential for Terrestrial Carbon Sequestration in Minnesota.* Key findings from the team include:

- Peatlands in Minnesota contain the largest carbon stocks in the state, in excess of 4 billion metric tons
- Release of this carbon to the atmosphere as CO2 can result from peatland drainage and conversion
- Release of this carbon to the atmosphere would accelerate global warming and require greater reductions in CO2 emissions elsewhere
- Destruction of 1,000 acres of peatland in Minnesota from mining or other activities would increase the state's total CO2 emissions by 2% over 2005 levels

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[200] Silvius, M. 2014. Carbon emissions from peatlands, at Wetlands International, *available at* http://www.wetlands.org/OurWork/ClimateMitigation/Carbonemissionsfrompeatlands/tabid/2738/Default.aspx (last accessed December 11, 2015).

[201] Earth Economics, *The Value of Nature's Benefits in the St. Louis River Watershed* (June 2015).

Their top recommendation was to "Preserve the existing large carbon stocks in peatlands and forests by identifying and protecting peatlands and forests vulnerable to conversion, fire, and other preventable threats."

The Minnesota Climate Change Advisory Group, a broad-based group of Minnesota citizens and leaders, including a representative from the Fond du Lac Environmental Program, was created to develop state-level policy recommendations to Governor Pawlenty. In 2008, the group released "Minnesota Climate Change Advisory Group Final Report", which included the following findings and recommendations:

- Wetlands have among the highest potential carbon-sequestration capacities for any type of land cover in Minnesota. Peatlands are likely Minnesota's largest single carbon sink, containing 37% of all carbon stored in the state.
- Protecting these enormous carbon reservoirs is critical
- Policy goals include protect and restore northern peatlands; by 2015, identify peatlands at risk of releasing greenhouse gases because of lowered water table or industrial uses such as mining; design policies to protect peatlands and wetlands from drainage and other carbon-releasing land uses.

This Project is clearly in violation of the science-based recommendations of multi-disciplinary experts across the state and throughout the country. Federal law and federal policy result in a clear mandate for the EIS process: any Project subject to environmental review must include a comprehensive analysis of climate change impacts. The FEIS manifestly failed to do so here.

P. Inadequate analysis of cultural resources.

The Co-lead agencies' overview of the National Historic Preservation Act and its relevance to the proposed Mining Project and Land Exchange remains inexplicably narrow and incomplete, despite multiple specific comments from tribal cooperating agencies on the SDEIS and PFEIS. While the FEIS properly finds that the Spring Mine Lake Sugarbush, the BBLV Trail Segment, and Mesabe Widjiu are eligible for listing under the National Register for Historic Preservation, [202] the FEIS completely neglects to reference Executive Order 12898 (requiring agencies try to avoid disproportionate and adverse environmental impacts on low-income and minority populations, including impacts on culturally important religious, subsistence or social practice); Executive Order 13007 (requiring agencies try not to damage "Indian sacred sites" on federal land and avoid blocking access to such sites by traditional religious practitioners); the Archeological Data Preservation Act and the Archeological and Historic Preservation Act (requiring agencies to report any perceived impacts that their Projects and program may have on archeological, historic and scientific data, and requires them to recover such data or assist the Secretary of the Interior in recovering them).

An adequate NEPA analysis would consider impacts on all of these types of resources and would address the requirements of all relevant and applicable laws and executive orders. Although clear adverse impacts to Traditional Cultural Properties have been identified through the §106 consultation process with the tribal cooperating agencies, the Co-lead agencies, the State Historic Preservation Offices (SHPO), and PolyMet, improperly discounted all of the information that was provided, and instead

[202] FEIS 4-355.

demand that the Bands satisfy an unwarranted level of proof before according these resources the protection required by law. [203] In so doing, they fail to take into account the history of actions by federal and state officials during the early to middle twentieth century to disrupt and prevent the Chippewa from engaging in traditional cultural practices. They also fail to take into account the general reluctance to share sensitive cultural information with non-Band members in light of this history, not to mention the cultural restrictions on who (inside and outside the Band) can legitimately and safely be trusted with sensitive information. The National Register Bulletin, *Guidelines for Evaluating and Documenting Traditional Cultural Properties*,[204] highlights the importance of conducting culturally sensitive consultation:

> Since knowledge of traditional cultural values may not be shared readily with outsiders, knowledgeable parties should be consulted in cultural con texts that are familiar and reasonable to them. It is important to understand the role that the information being solicited may play in the culture of those from whom it is being solicited, and the kinds of rules that may surround its transmittal. In some societies traditional information is regarded as powerful, even dangerous. It is often believed that such information should be transmitted only under particular circumstances or to particular kinds of people. In some cases information is regarded as a valued commodity for which payment is in order, in other cases offering payment may be offensive. Sometimes information may be regarded as a gift, whose acceptance obligates the receiver to reciprocate in some way, in some cases by carrying out the activity to which the information pertains.
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> It may not always, or even often, be possible to arrange for information to be sought in precisely the way those being consulted might prefer, but when it is not, the interviewer should clearly understand that to some extent he or she is asking those interviewed to violate their cultural norms. The interviewer should try to keep such violations to a minimum, and should be patient with the reluctance that those interviewed may feel toward sharing information under conditions that are not fully appropriate from their point of view.

Id. at 8.

The FEIS's Figure 4.2.9-5, Cultural Resources Analysis Surficial Groundwater Quality Area of Potential Effect is incorrect; the flawed MODFLOW hydrologic characterization is carried forward to an inaccurate determination of the Area of Potential Effect (APE).

The Band does not agree with the Co-lead agencies' assessment of the visual effects from the Skibo Scenic Overlook[205]. It is likely that the 200' tall stockpiles will eventually overshadow the plant site and be considerably more visible, especially on a clear day. Of greater concern, however, is the lack of interest in including points of view of the people who hold this land sacred. There was no attempt to include the viewpoints of Band members in this analysis; had Band members been consulted there

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[203] FEIS 4-340.
[204] Available at http://www.nps.gov/nr/publications/bulletins/pdfs/nrb38.pdf.
[205] FEIS 4-323, Figure 5.2.11-1.

would have been no question about visual effects.

The remaining comments concern the properties of spiritual and cultural significance to the Bands, Mesabe Widjiu, Beaver Bay to Lake Vermillion Trail and Spring Lake Mine Sugarbush. Mesabe Widjiu is correctly identified as a sacred landform, but needs to be considered in its entirety, as the Band stated in its comments on the SDEIS. The segment encountered within the Project area is small, but integral to the property. Adverse affects to any portion impact the entire feature.

The Beaver Bay to Lake Vermillion Trail, as a traditional cultural property, requires further clarification. The trail is one of many within a system of water and overland routes that crisscrossed northeastern Minnesota and extended to the border lakes long before the fur trade and continued to be used through the early 20th century. To date, the BBLVT has not been fully researched or field verified within the Project area. The trail needs to be better documented. There has been no rigorous attempt to research the BBLVT by the Bands or Lead Agencies, although the Superior National Forest Heritage Program reviewed the GLO plats and conducted field investigations on Superior National Forest land. Additional fieldwork should be conducted in the spring or fall when ephemeral features such as foot trails are less easily concealed by vegetation and more easily discerned.

The Bands remain skeptical of the Co-leads claim that there will be no effect to the Spring Lake Mine Sugarbush from the proposed NorthMet Project. Indirect effects through dust deposition and unauthorized collection are anticipated since the Sugarbush is situated immediately adjacent to the proposed plant site. While the lead agencies dismiss particulate accumulation as a problem, based on visual effects analysis conducted for the Project and a site visit in 2010, their lack of concern seems speculative. The proximity of the plant site to the Sugarbush and the cumulative effects of dust on leaves, trees and understory flora have not been examined in detail and their long term effects may well be detrimental to vegetation, other than maples, that comprise the Sugarbush."[206]

Q. Inadequate cumulative effects analysis, across all resource categories.

Cumulative effects result in a relentless, unmitigated diminishment of treaty resources and access to those resources. Yet across virtually all resource categories, the SDEIS predicts that there will be no adverse impacts as a result of the NorthMet Project Proposed Action; this conclusion then enables the Co-leads to determine 'no cumulative effects' from the Project and the land exchange. But those initial no-impact predictions are contingent upon assumptions that all best management practices, engineering controls and mitigation measures discussed throughout the SDEIS will be successfully and flawlessly implemented, and that the NorthMet Project will comply with all applicable federal state and local regulations and permit requirements, particularly water quality standards. The tribal cooperating agencies have provided extensive comments and analyses over the course of the DEIS and SDEIS processes that support our misgivings for this circular logic. We presented a substantial alternative analysis of cumulative effects from the NorthMet Project Proposed Action as part of our commenting during the preliminary SDEIS review.[207] Key concepts from our tribal CEA include:

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[206] Bois Forte NorthMet SDEIS comments March 2013.
[207] *Id.*

- Tribal cooperating agencies believe the CEA for land use should encompass the 1854 Ceded Territory, as the signatory Bands have lost access to substantial portions of the 1854 CT and the resources within.
- The tribal cooperating agencies believe the water quality and hydrologic cumulative effects analysis should incorporate the entire St. Louis River watershed. This watershed has experienced substantial historic, current and proposed expanded mining activities, as well as other industrial, agricultural and urban development. In addition to the direct surface water and wetland impacts (loss and/or degradation) from these activities, nearly half of the watershed has experienced hydrologic alteration from extensive ditching.
- Tribal cooperating agencies consider a 216,300 acre area bounded by the St Louis River, Lake Superior, Lake Vermilion and the Beaver Bay to Vermilion Trail to be a Tribal Historic District, and the pertinent area for consideration of cumulative effects to cultural resources.
- The tribal cooperating agencies' review of the water modeling data packages for the NorthMet Project Proposed Action led to our conclusion that GoldSim did not accurately predict existing conditions, and cannot be relied upon to accurately predict future Project conditions.

The FEIS improperly rejected all of these. Neither history nor geography is used in the FEIS to determine the areas in which cumulative impacts are to be considered. Instead, the FEIS instead uses an arbitrary and narrow construct. Such an approach, which is unmoored from the topography and hydrology of the area where the Project would be located, and which does to give full consideration to past, current and foreseeable future mining activity, are contrary to NEPA. *See Habitat Education Center Inc. v. Bosworth*, 363 F.Supp.2d 1070 (E.D. Wis. 2005) (Forest Service's designation of an area for cumulative impacts analysis as the boundary of the proposed Project "plus two" miles for considering impacts on goshawk was arbitrary; because other Projects in the area could also affect the goshawk in the region, the area that should have been considered was the proposed Project area coupled with the five other Project areas.)

The Band raises again the criticism that the cumulative effects analysis is partially based on the flawed hydrologic characterization, the incorrectly calibrated groundwater model, unrealistic seepage capture rates, and adaptive management concepts that have not been rigorously explored and objectively evaluated. Based upon these flawed presumptions, the Co-lead agencies maintain that the Project will meet MN WQS, and that "the potential for exceedances of water quality evaluation criteria as a result of cumulative effects from the NorthMet Project Proposed Action and other reasonably foreseeable actions is considered unlikely."[208] The Co-leads contend that some individuals and localized wildlife populations may be affected by other Projects in the Cumulative Effects Analysis Area (CEAA), but overall species populations are expected to remain available. There will be no water quality effects, including those from increased mercury, because all parameters are expected to meet the standards and regulations set forth by the appropriate state or federal agency or program ('evaluation criteria'). Since these laws are intended to protect important natural and cultural resources there will not be any substantive cumulative effects to consider.[209] The FEIS states that will be no socioeconomic cumulative effects; [210] cumulative wetland loss from direct impacts is not clearly communicated, but there would

[208]FEIS 6-31, 6-32.
[209] FEIS 6-124.
[210] FEIS 6-125.

only be 0.1 to 12 percent cumulative indirect wetland loses in the Partridge and Embarrass River watersheds;[211] no off-site cumulative effects to groundwater flow;[212] and so on. The Band cannot accept conclusions of 'no cumulative effects' that are based upon the circular logic presented in the FEIS.

Again, because the Co-lead agencies' approach to cumulative effects analysis has been so consistently deficient, the tribal cooperating agencies have continued to compile information and seek technical assistance to do more robust CEA within the 1854 Ceded Territory. Recently, the Grand Portage Band contracted with the University of Minnesota Duluth Natural Resources Research Institute to analyze 1854 Ceded Territory cumulative impacts to wetlands, historic trails connectivity, public access to enable the exercise of usufructuary rights, and wildlife passage. In all four areas of analysis, the cumulative effects to the 1854 Ceded Territory resulting from mining on the Iron Range are distinctive and well-defined. But again, the Co-lead agencies declined to include this relevant technical analysis in the FEIS.

In sum, while any individual mine may not have significant impacts on plants, wildlife or the landscape, the cumulative impacts of thousands of acres of habitat loss and degradation correspond to a legitimate, significant concern for treaty-protected resources and access to them. As more mines are developed, these resources will increasingly suffer negative impacts either through direct loss of habitat or indirectly through disturbance. Traditional activities such as harvesting, fishing, gathering, hunting and trapping and other forms of treaty resource use will suffer as a result. The FEIS is fundamentally flawed for its failure to undertake a proper cumulative impacts analysis.

2. Inadequate financial assurance analysis and disclosure.

The FEIS readily acknowledged that it does not include an analysis of the financial assurances required for the Project. The FEIS recites: "The level of engineering design and planning required to calculate detailed financial assurance amounts is not currently available, but would be evaluated in detail during the permitting process." FEIS 3-140. The failure to determine the financial assurances required for the Project, and its indefinite post-closure water treatment, is contrary to NEPA. It circumvents an important aspect of the public's ability to review and evaluate the costs and benefits of the proposed Project, and develop an informed opinion as to whether a Project of this magnitude should move forward into permitting. The absence of an analysis on financial assurances further compromises the environmental review, as it precludes any informed assessment of whether the proposed plans for controlling and mitigating the mine's adverse environmental impacts would be effective – either during mine operations and for hundreds of years after closure. And while the FEIS defers consideration of this issue for the permitting process, the FEIS offers nothing to indicate what information would be available then that could not be analyzed now. If the level of engineering design is not adequate or available at this time, then the mine plan itself is not sufficiently advanced to determine the financial viability or the environmental safety of the Project and should not proceed.

The need for sufficient financial assurance for the Proposed Project is well-recognized. This is evidenced by testimony at the Legislative Committee[213], numerous comments made by citizens at the three public

[211] FEIS 6-160.
[212] FEIS 6-31.
[213] *See* http://www.house.leg.state.mn.us/comm/docs/PolyMet-MWatkins.pdf.

hearings, and a recent public statement by the Minnesota State Auditor[214]. The General Accounting Office ("GAO"), in testimony before the US Senate Committee on Energy and Natural Resources entitled *HARDROCK MINING: Information on Abandoned Mines and Value and Coverage of Financial Assurances on BLM Land*, presented findings that in total, the federal government had spent at least $2.6 billion to remediate hardrock mine sites from 1998 to 2007.[215] The USEPA has recently identified mines as a priority class of facilities for which to develop financial responsibility requirements.[216] In 2009, as part of the largest environmental damage bankruptcy case in U.S. history, the mining company ASARCO was ordered to pay $194 million to resolve environmental liabilities from operations that contaminated land, water, and wildlife resources on federal, state, tribal, and private land.[217] The State of Minnesota has spent millions of dollars remediating mine sites (e.g. Reserve Mining).[218]

In order to determine the impacts of a mine, the effectiveness of closure and reclamation after the mine is no longer in use must be assessed.[219] But in the FEIS, no detail is provided regarding the estimated amount of financial assurance that would be sufficient for reclamation, closure, mitigation, and remediation of adverse effects from the Project, despite clear and consistent recommendations from EPA to do so. Even though the DNR has earlier stated that PolyMet financial assurance will include clean-up costs for contamination resulting from LTV operations[220], the FEIS provides neither a timeline nor a discussion regarding financial assurance for the existing contamination associated with previous mining activities at the site. This is of particular concern because the hardrock mining industry has a pattern of failed operations, which often require significant environmental responses that cannot be financed by industry.[221]

In the Co-lead agency evaluation of the underground mining alternative, the North Met Deposit is described as a "low- to medium-grade mineral resource" [222] which is somewhat at odds with its

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[214] http://www.startribune.com/opinion/commentaries/232745641.html "State Auditor on Mining: Long Term Risk Too Hard to Quantify", Nov. 20, 2013 (last visited March 10, 2013).
[215] GAO-08-574T (March 12, 2008), available on-line at http://www.gao.gov/new.items/d08574t.pdf (last visited Feb. 1, 2010).
[216] EPA Advance Notice of Proposed Rulemaking, Priority Classes of Facilities for Development of CERCLA Section 108(b) Financial Responsibility Requirements, 75 Fed. Reg. 816 (Jan. 6, 2010).
[217] Dept. of Interior News Release, "ASARCO Settlement Provides $194 Million for Federal, State and Tribal Wildlife and Habitat Resource Restoration" (Dec. 10, 2009), *available at* http://www.fws.gov/pacific/news/2009/ASARCOSettlementNR.pdf (last visited Feb. 1, 2010).
[218] *See, e.g.*, Greg Vandegrift, KARE 11 News, "The Dirty Legacy of Reserve Mining" (Nov. 29, 2006), *available at* http://www.greatlakesdirectory.org/mn/121406_great_lakes.htm (last visited Feb. 1, 2010).
[219] EPA, Office of Solid Waste and Emergency Response, Financial Assurance for Hardrock Mine Cleanup (2007), Training Doc., Ex. E; *see also* EPA Advance Notice of Proposed Rulemaking, Priority Classes of Facilities for Development of CERCLA Section 108(b) Financial Responsibility Requirements, 75 Fed. Reg. 816 (Jan. 6, 2010).
[220] SDEIS, 4-11.
[221] *See* 40 C.F.R. § 320.
[222] *See* DNR, US ACE, USFS, Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange Environmental Impact Statement, September 27, 2013.

description as "one of the largest untapped deposits of copper and nickel, and other precious metals" or "world class resource" as it is represented in continual media coverage. From the information provided in the FEIS, we are not able to determine whether mining this mineral deposit in accordance with environmental standards will be profitable enough to provide adequate environmental protections and financial assurance for reclamation and closure.

These concerns – as to whether the mine will generate sufficient revenues to cover the cost of the necessary environmental protections – are heightened by the absence of any discussion in the FEIS of the potential profitability of the mine including the costs of the waste water treatment facilities and other environmental controls that are essential elements of the Project. The uncertain viability of the propose mine is further heightened by the decline in the price of copper.[223] Glencore, which is financing PolyMet, and which is reported to have a credit rating "two notches above junk status"[224] has been and is continuing to sell assets, including its interests in copper mines worldwide, and scaling back production of copper to address the drop in copper prices and to reduce its debt.[225]

The financial assurance costs for long-term post-closure monitoring and maintenance identified in the FEIS range from $3.5 to $6 million, but these appear to be an estimate for monitoring activities only[226] *without any long-term wastewater treatment costs*. At another mine site on the same property, the estimate of annual operation and maintenance costs for the same type of wastewater treatment the Project proposes to use (reverse osmosis/nano-filtration) was $2.6 million.[227] Perpetual operation and maintenance of mechanical wastewater treatment is an additional cost that must be represented in the estimate of financial assurance. The cursory estimate of financial assurance provides little detail about how the cost estimates were derived. Instead, specific discussions about the scale and appropriate instruments for financial assurance have been postponed until the permitting phase of this Project. This approach fundamentally contradicts federal and state environmental policy and the FEIS should have incorporated significant additional study to appropriately evaluate closure, mitigation, reclamation, and perpetual treatment cost estimates. As Minnesota State Auditor Rebecca Otto stated in her November 20, 2013 opinion piece in the *Minneapolis Star Tribune*: "Finally, a financial assurance review should be included in every environmental impact statement. Annual reviews of financial assurances should be required and made available to taxpayers upon request, not just when the Department of Natural Resources decides to make them public."

In sum, given the extensive and long term measures that the FEIS recognizes are required to remediate the adverse environmental impacts of the proposed mine, the lack of information regarding the extent and costs for adequate financial assurance to protect the public interest remains a significant deficiency

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[223] See Wall Street Journal, "Copper Swoon Presses Glencore, Other Mines" (Nov 12, 2015); New York Times, "If it Owns a Well or Mine, It's probably in Trouble" (December 8, 2015) attached as Exhibits 7a, 7b.

[224] Wall Street Journal Nov. 12, 2015 at 3.

[225] See Duluth News Tribune, "PolyMet Stockholder, Glencore Selling Copper Mines in Australia, Chile" (Oct 13, 2015); New York Times Dec 8, 2015 at p. 2, attached as Exhibits 7c, 7b.

[226] Foth Infrastructure & Environment, LLC, Memo to PolyMet Mining Inc., March 11, 2013. Ex. A.

[227] Barr Engineering, Area Pit 1 Evaluation in Support of Non-Degradation Analysis Mesabi NuggetPhase II, Nov. 30, 2009.

of this FEIS.

3. Inadequate alternatives analysis.

Federal law set out in the National Environmental Policy Act requires all federal agencies to include "alternatives to the proposed action" in every recommendation for a major federal action significantly affecting the environment, and to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." 42 U.S.C. §4332(C)(iii) and (E). The regulations implementing NEPA further require that the EIS "present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public." 40 C.F.R. §1502.14. In the alternatives section of an EIS, agencies must "[r]igorously explore and objectively evaluate all reasonable alternatives," devote "substantial treatment" to each alternative considered so that reviewers may evaluate their comparative merits and "include appropriate mitigation measures not already included in the proposed action." 40 C.F.R. §1502.14(a),(b),(f).

These requirements are "the heart of the environmental impact statement." 40 C.F.R. § 1502.14. The federal courts have so found. "The importance of this section of the EIS to the NEPA process has been stressed repeatedly by" the federal courts, and described as the "the linchpin of the entire impact statement." *NRDC v. Callaway, 524 F.2d 79, 92 (2d Cir.1975)* (citations omitted); *accord Dubois v. U.S. Dep't of Agric., 102 F.3d 1273, 1286-87 (1st Cir. 1996).* "It is absolutely essential to the NEPA process that the decisionmaker be provided with a detailed and careful analysis of the relative environmental merits and demerits of the proposed action and possible alternatives." *Id.* "A 'viable but unexamined alternative renders [the] environmental impact statement inadequate.'" *Muckleshoot Indian Tribe v. U.S. Forest Serv.*, 177 F.3d 800, 814 (9th Cir. 1999) quoting *Citizens for a Better Henderson v. Hodel,* 768 F.2d 1051, 1057 (9th Cir.1985). Similarly, a failure to discuss the alternatives, or dismissal of them by conclusory statements, renders the EIS inadequate. *Nelson v. Butz,* 377 F. Supp. 819, 822-23 (D. Minn. 1974).

In addition, in identifying alternatives, a federal agency "may not define the goals of its projects so narrowly that only its preferred alternative will meet those goals." *Envtl. Prot. Info. Ctr. v. U.S. Forest Serv.*, 234 F. App'x 440, 443 (9th Cir. 2007) citing *City of Carmel-by-the-Sea v. U.S. Dep't of Transp.,* 123 F.3d 1142, 1155 (9th Cir.1997). More fundamentally, a federal agency may not adopt "private interests to draft a narrow purpose and need statement that excludes alternatives that fail to meet specific private objectives." *Nat'l Parks & Conservation Ass'n v. Bureau of Land Mgmt.*, 606 F.3d 1058, 1072 (9th Cir. 2010) (finding that EIS for a proposed land exchange did not consider a proper range of alternatives when the "BLM adopted Kaiser's interests as its own to craft a purpose and need statement so narrowly drawn as to foreordain approval of the land exchange. As a result of this unreasonably narrow purpose and need statement, the BLM necessarily considered an unreasonably narrow range of alternatives.").

The NEPA "hard look" further requires agencies to "exercise a degree of skepticism in dealing with self-serving statements from the prime beneficiary of a project" when analyzing alternatives. *Simmons v. United States Army Corps of Engineers*, 120 F.3d 664 (7th Cir. 1997).

Contrary to the explicit requirements of the Council on Environmental Quality (CEQ) rules, *the FEIS does not evaluate or examine in any substantive way potentially viable Project alternatives.*[228] Even the no action alternative, which is the only alternative to the NorthMet Project Proposed Action evaluated in the FEIS,[229] is lacking in detail and analysis. Tribal cooperating agencies identified this deficiency in the 2009 DEIS, consistently brought it forward for discussions throughout the SDEIS process, and US EPA cited the lack of alternatives as a factor when issuing an EU-3 rating for the DEIS. Although the SDEIS was revised to reflect the Project proponent's preferred action, and the FEIS includes several new modifications and mitigation measures,[230] the *only* alternative analyzed in any detail concerns simply the acreage of the proposed land exchange (Alternative B). This is contrary to the CEQ regulations that require federal agencies to evaluate in detail the reasonable alternatives in an EIS.

Nor is there any evaluation or identification in the FEIS of the 'least environmentally damaging practicable alternative' ("LEDPA") as required before approving a CWA §404 wetlands permit. 40 CFR § 230.10(a) specifies that "no discharge of dredge or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences." In addition, the CEQ guidance clarifies that "Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant."[231] For the reasons set out below, and as discussed in Section 5, infra, the Project is not the least environmentally damaging practicable alternative and the application for a section 404 permit should be denied.

State law also requires consideration of alternatives. FEIS Chapter 1 describes the Minnesota requirements, stating:

> *MEQB statutes and rules (Minnesota Statutes, chapter 116D, sections 04 and 045; and Minnesota Rules, part 4410, subpart 0200 through 7500) require that an EIS include at least one alternative in each of the following categories (in addition to the No Action Alternative):*
> *•alternative sites,*
> *•alternative technologies,*
> *•modified designs or layouts,*
> *•modified scale or magnitude, and*
> *•alternatives incorporating reasonable mitigation measures identified through comments received during the comment periods for EIS scoping or for the DEIS.*
>
> *If no alternative is included for any given category, an explanation must be provided in*

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[228] 40 C.F.R. § 1502.14 (stating also that the EIS must "[d]evote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits."); 40 C.F.R. § 1502.16 (requiring the EIS to include analysis of "[t]he environmental effects of alternatives including the proposed action.")
[229] FEIS 3-146.
[230] FEIS 3-150.
[231] CEQ, Forty Most Asked Questions Concerning CEQ's National Environmental policy Act, March, 1981.

> *the EIS. An alternative may be excluded if it fails to meet the underlying need for or purpose of the Project, is unlikely to have any significant environmental benefit compared to the Project as proposed, or another alternative would likely have similar environmental benefits but substantially less adverse economic, employment, or sociological effects.*[232]

Alternatives exist

Multiple mine plan alternatives exist that could provide mitigation for or prevent long-term environmental damage, but none are considered in the FEIS. Examples of alternatives and their resultant environmental benefits include:

- paste or dry tailings disposal to reduce the Project footprint, use less water, and minimize long-term treatment and maintenance (decreasing the risk of surface and groundwater pollution);
- back-filling all waste rock into the east, central and west mine pits (reducing the mine foot print at closure, reducing contaminant runoff to surface and groundwater, reducing volume of water requiring perpetual treatment, restoring additional mine site wetlands);
- provide reverse osmosis treatment at the mine site immediately rather than waiting until year 40 (augmenting water loss in adjacent high quality wetlands in the Partridge River watershed), and;
- underground mining (multiple and substantial environmental benefits).

Paste Tailings

A fundamental operational component of the Proponent's preferred alternative analysis described in the FEIS is to deposit their reactive slurry tailings on top of existing taconite tailings in an unlined basin[233] that is currently required, under a Consent Decree, to remediate seepage that has already polluted the nearby ground and surface waters[234]. The Project is projected to produce 110,736 tons of wet tailings slurry per day (86% by volume).[235] The processing facility is predicted to produce 3,880 gpm of contaminated seepage,[236] which translates to an annual volume of over 2 billion gallons per year of contaminated seepage. This seepage is proposed to be captured through a series of …….(cite)

The FEIS analysis assumes a nearly complete tailings basin seepage capture rate of 99.5%[237] – a performance efficiency that has not been demonstrated anywhere in the US.[238] There is an existing seepage capture system installed at SD026 as a requirement of the Consent Decree, yet it has proven to be so ineffective that Cliffs Erie LLC (the responsible party) has proposed building an additional dam and

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[232] FEIS 1.4.2.2 Alternatives; see also Minn. R. 4410.2300, item G.
[233] FEIS 3-104, 3-158, 4-427, 5-5, 5-185.
[234] Barr Engineering, Long-term Mitigation Evaluation and Implementation Plan for SD026, Prepared for Cliffs Erie LLC and PolyMet Mining Inc., April 2012.
[235] PolyMet 2015q, p. 621.
[236] FEIS 5-179, 5-181.
[237] FEIS 5-181.
[238] US EPA, Evaluation of Subsurface Barriers at Waste Sites, August, 1998.

capture system further downstream[239].

Dewatered or paste tailings placed on a liner and covered could substantially minimize the mass and concentration of pollutants reaching the Embarrass River watershed wetlands and the Embarrass River. This is a modern mine waste management technique used by many mines in the US and around the world,[240] yet it has never been adequately evaluated as an alternative for improving this Project. "Converting to paste tailings technology from conventional slurry tailings at most mines makes sense, both environmentally and economically. Paste tailings use less water, require less land, do not require engineered containment dams, generate less acid and contaminants, reduce long-term costs and allow for early reclamation. Slurry tailings use and discharge large volumes of water, require dust control measures, require large land areas and containment dams for disposal, and create contaminated water that must be captured and treated."[241]

Despite specific comments on the SDEIS and preliminary FEIS, any acknowledgement, consideration or discussion of the substantial environmental benefits of paste or dry-stack tailings is completely missing from Table 3.2-17 in the FEIS. This is a significant deficiency in the analysis of alternatives, as it would provide substantive environmental benefits.

Backfilling all waste rock

In the 2009 DEIS, the Co-lead agencies maintained that all waste rock should be considered reactive. FEIS Table 3.2-8, Waste Rock Categorization Properties[242], acknowledges that the Category 1 waste rock (rock that is ≤0.12% sulfur), which constitutes 70% of the volume of waste rock, has a "**low potential to generate acid, but may leach metals.**" Back-filling all of the mine pits with all of the waste rock would reduce the final surface footprint of the mine at closure, and make possible 526 acres of wetland restoration where the Category 1 stockpile is now proposed to be stored in perpetuity. This alternative would prevent the need for a *permanent* separate seepage capture system around an unlined waste rock pile, as proposed in the Project, which would have to perform at an above-optimum capture rate in perpetuity to comply with Minnesota Water Quality Standards ("MN WQS"). Capping and re-vegetating the mine pits after backfilling with waste rock would prevent deep infiltration of precipitation and reduce mobilization of toxic metals.

The substantial environmental benefits of backfilling all waste rock as described at FEIS §3.2.3.4.2 are simply dismissed by declaring it moot, on the basis of private mineral resource encumbrance under PolyMet's lease agreement – which, as acknowledged, could be renegotiated. Thus the reasons for eliminating this alternative appear to be based on the private interests of the company, not any public interests. The FEIS further states that the costs of backfilling the West Pit and its financial assurance

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[239] Letter of Cliffs to John Thomas, MPCA, Compliance and Enforcement, May 7, 2013, regarding planned improvements to SD026 pump-back system, copying Kevin Pylka, PolyMet Mining, Inc.
[240] Mining Engineering, November 2011, Vol. 63, No. 11., *available at* (http://www.knightpiesold.com/en/assets/File/NovemberOptimized11article.pdf (last visited March 1, 2014).
[241] Kuipers & Associates, Converting to Paste Tailings at the Chevron Mining, Inc. Molybdenum Mine Questa, New Mexico, Sept. 2012.
[242] FEIS 3-46.

requirements could affect the ability of PolyMet to secure financing. This is a hollow argument, as ***all*** of the costs associated with the proposed environmental controls, mitigation, financial assurance, perpetual treatment, and Project 'enhancements' themselves render PolyMet's ability to secure financing dubious, especially in light of current global supply of copper, the drop in demand, and the corresponding decline in copper prices. Indeed, the declining price of copper has lead PolyMet's primary stockholder to sell copper mines elsewhere and suspend copper production. [243]

The FEIS inexplicably removes the stockpile liner described in the 2009 DEIS for Category 1/2 waste rock in the current Project proposed action. A comparison of Table 3.2-16 as set out in the 2009 DEIS, and the subsequent elimination of the liner for the stockpile in the SDEIS and FEIS is as follows:

> *DEIS: "Category 1 and 2 waste rock would be stored in a permanent lined/covered stockpile (Category 1/2 Stockpile) north of the west pit (years 1-11)"*
>
> *SDEIS, FEIS: "Category 1 waste rock mined from years 1-13 would be stored in an unlined, permanent stockpile north of the West Pit. The stockpile would have a geomembrane cover system at completion and surface water and groundwater collection system would encompass the entire stockpile and direct water to the Mine Site WWTF." (emphasis supplied).*

The Band maintains that, if not backfilled, the Category 1 waste rock stockpile **must be lined**.

Underground Mining

The Minnesota Department of Natural Resources (DNR) and US Army Corps of Engineers (USACE) superficially evaluated and subsequently dismissed underground mining as an alternative to the proposed open pit Project for the 2009 DEIS. The Co-lead agencies eliminated this alternative from further evaluation because it would have had "a significantly reduced rate of operation that would not be considered economically feasible, and, therefore, would not meet the Purpose and Need of the Project."[244] Tribal cooperating agencies urged the Co-lead agencies, now including the US Forest Service (USFS), to do a more robust analysis of the underground mining alternative for the SDEIS, but the Co-lead agencies did not "exercise a degree of skepticism in dealing with self-serving statements from the prime beneficiary of a Project."[245] when analyzing this alternative. This alternative was eliminated by the Project proponent based purely on an economic decision that underground mining would not be as profitable as open pit mining.

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[243] See Wall Street Journal, "Copper Swoon Presses Glencore, Other Mines" (Nov 12, 2015); New York Times, "If it Owns a Well or Mine, It's probably in Trouble" (December 8, 2015) Duluth News Tribune, "PolyMet Stockholder, Glencore Selling Copper Mines in Australia, Chile" (Oct 13, 2015), attached as Exhibits 7a-c.

[244] *See* MN DNR, US ACE, USFS, Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange Environmental Impact Statement, September 27, 2013.

[245] Simmons v. United States Army Corps of Engineers, 120 F.3d 664 (7th Cir. 1997).

The Co-lead agencies claim that "it was not possible to undertake a quantitative, side-by-side assessment of the underground mining alternative."[246] An underground mine would have a reduced mining rate and life of mine, employed fewer workers for a shorter period of time, and reduced state and local tax revenues. Although the underground mining alternative would offer substantial environmental benefits (significantly less wetland destruction, less mine-generated waste, less groundwater and surface water pollution generated and requiring perpetual treatment and control, less reclamation and closure activities, less nuisance and reactive dust to be controlled, less noise and vibration impacts, less visual impacts), the economic and intrinsic value of those benefits are not even estimated. In addition, an underground mine Project would not require a federal land exchange, resulting in lower start-up costs and avoiding the permanent loss of high quality resources (as discussed in later comments on Land Exchange impacts). Based upon an incomplete analysis of the *benefits* of an underground mine, the Co-lead agencies determined that this alternative would result in reduced socioeconomic benefits, and; "PolyMet would not move forward with an unprofitable Project, thus any potential environmental or socioeconomic benefits associated with this alternative are moot."[247]

The Co-lead agencies determined that underground mining was considered technically feasible, but concluded that "PolyMet is a private sector and for-profit company, the value of the saleable material would need to provide sufficient income to cover operating cost (which includes, but is not limited to, the cost of mining, processing, transportation, and waste management), capital cost (to build and sustain facilities), *an adequate return to investors*, reclamation, and closure costs and taxes. An underground mining Project would leave most of the NorthMet Deposit unmined because of its low metal value relative to the cost of mining and mineral processing. Other material would have to be left in place for safety reasons, to prevent collapse."[248] Therefore, "the Co-lead Agencies found that while underground mining is technically feasible, available, and would offer significant environmental benefits over the proposed NorthMet Project, it would not be economically feasible and would not meet the Purpose and Need. Since the underground mining alternative would not meet all of the screening criteria, it is not considered to be a reasonable alternative. Therefore, the underground mining alternative was eliminated from further evaluation in the SDEIS."[249]

The SDEIS did not contain the appropriate level of detail required to eliminate this alternative. The conclusion that underground mining is neither viable nor preferable remains substantially unjustified, despite repeated requests by the tribal cooperating agencies for further analysis.[250] The Project Proponent, without considering the economics of perpetual treatment, the purchase of thousands of acres of land for the federal land exchange, direct and indirect wetland mitigation costs, etc., concludes in their economic analysis that underground mining is "[n]ot economically viable" while simultaneously claiming that backfilling the west pit would create encumbrances not allowed in their mineral lease due to mineral resources located below the west pit that could only be accessed through underground mining. This is not the appropriate rigor in a cost-benefit analysis for thoroughly evaluating an EIS

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[246] *See* MN DNR, US ACE, USFS, Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange Environmental Impact Statement, September 27, 2013.
[247] *Id.*
[248] *Id.*
[249] *Id.*
[250] Tribal cooperating agency/Co-lead agency 'sieve list' meetings, teleconferences on this issue.

alternative. The CEQ regulations require that, where a cost-benefit analysis is "relevant to the choice among environmentally different alternatives," there are a variety of additional requirements, including "analysis of un-quantified environmental impacts, values, and amenities,"[251] in addition to other CEQ alternatives rules.

Further, as consultation with tribal cooperating agencies under §106 of the National Historic Preservation Act has continued, an additional reason for re-examining the underground mining alternative emerged: avoidance of adverse impacts to a traditional cultural property, the Beaver Bay Trail to Lake Vermillion Trail, which transects a portion of the proposed east pit. Yet despite the numerous and substantive environmental and cultural resource benefits that an underground mine would afford, it remains eliminated from consideration in the FEIS.

As already argued in the Tribal Position,[252] significant additional study of the underground mining alternative is mandated, and the FEIS offers no new discussion of the reasons for rejecting the alternative. The economic viability of an underground mine depends on a variety of factors including ore grade, market prices, cost of tailings management, and waste rock disposal. A study of this particular deposit was performed by the prior owner of the site, US Steel, which actually *recommended* underground mining.[253] PolyMet is well aware of this study, given that the company included it in a filing with the Securities and Exchange Commission in 2003.[254] In fact, by examining geologic cross-sections showing the distribution of ore by depth,[255] it appears that there are substantial ore reserves at depths that likely could not be accessed by the proposed open-pit mine. The environmental costs of open-pit mining and the requisite wetland mitigation and above-ground disposal of tailings and waste rock are immense. These environmental costs, combined with the most current understanding of deposit ore grades, reasonably potential metals prices, and the costs associated with perpetual treatment must all be evaluated to determine the feasibility of this alternative.

No-Action Alternative

The FEIS includes only one alternative – a no action alternative. As stated in Chapter 3 of the FEIS Chapter 3, NorthMet Project Alternatives:

> *As a result of screening and analysis, the NorthMet Project No Action Alternative (i.e., the NorthMet Project Proposed Action would not occur) is the only alternative to the NorthMet Project Proposed Action evaluated in detail in this FEIS. Tailings Basin closure*

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[251] 40 C.F.R. § 1502.23.

[252] DEIS Table 3.2-4 fn 22.

[253] *See, e.g.*, S.E.C. Form 20-F, PolyMet, Inc. Annual Report for Yr. ending 1/31/03, ITEM 4.D(d) (stating "[a] 1971 study for US Steel suggested mineralized deposits to a depth of 2000 feet and recommended underground mining techniques for recovery."), *available at* http://www.sec.gov/Archives/edgar/data/866028/000086602803000003/pmf2003.txt (last visited Feb. 1, 2010).

[254] *Id.*

[255] *See* PolyMet Tech. Doc. GC06. All Project Technical Documents available on the MNDNR's ftp site for the Project (password protected), *available at* ftp://ftp.dnr.state.mn.us/PolyMet/Reports%20and%20Studies/Reports%20Posted%20by%20PolyMet/ (last visited Feb. 2, 2010).

> *cap alternatives were reconsidered, and underground mining and backfilling the West Pit with Category 1 waste rock were considered in more detail, but remained eliminated.*[256]

But even the FEIS' No Action Alternative analysis is deficient. The FEIS describes the No-Action Alternative as follows:

> *Under the NorthMet Project No Action Alternative, the NorthMet Project Proposed Action would not occur. The consideration of a No Action Alternative is required to be evaluated in this FEIS in accordance with NEPA and MEPA.*
>
> *If the NorthMet Project Proposed Action is not approved, the Mine Site would be returned to pre-exploration conditions under the requirements of exploration approvals to reclaim surface disturbance associated with exploratory and development drilling activities. Other existing surface uses would be allowed to continue consistent with the Forest Plan.*
>
> *No further upgrades or new segments would be constructed along the existing power transmission line, railroad, or Dunka Road, which would continue to be used by their private owners.*
>
> *At the brownfield Plant Site, Cliffs Erie would continue to complete closure and reclamation activities as specified under state permits and plans and the Cliffs Erie Consent Decree. This would include completing activities for the localized affected areas under the Minnesota Voluntary Investigation and Cleanup (VIC) Program, removal of the former Plant Site building, and management of seepage at the Tailings Basin embankment.*[257]

The FEIS's discussion of the No Action Alternative falls far short of NEPA's requirement that the agencies "[r]igorously explore and objectively evaluate all reasonable alternatives" and "[d]evote substantial treatment to each alternative considered in detail . . . so that reviewers may evaluate their comparative merits." 40 C.F.R. 1502.14(a), (b). The FEIS's brief discussion of the No Action Alternative is misleading. Its statement that under the No-Action Alternation the "Mine Site would be returned to pre-exploration conditions under the requirements of exploration approvals to reclaim surface disturbance associated with exploratory and development drilling activities," it creates the inaccurate impression that biological integrity of the mine site is somehow already damaged. The FEIS compounds this by then wholly failing to explain, in detail, that the No Action Alternative would also avoid all adverse environmental impacts of the Project. The No Action Alternative means that: there would be no direct loss of over 900 acres of high quality wetlands, no adverse indirect impacts to thousands more wetland acres, no loss of high quality forested uplands, no further diminishment of wildlife habitat, no permanent loss of treaty resources under the land exchange, no cumulative effects to resources and environmental quality.

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[256] FEIS 3.2.3.1.3.
[257] FEIS 3.2.3.2 NorthMet Project No Action Alternative.

The FEIS also further fails to disclose that, in fact, water quality should improve substantially under the No Action Alternative. While the FEIS makes a point of stating that the Cliffs Erie plant is a brownfield site, it then omits all reference to the fact that Cliffs Erie Consent Decree requires that the closed tailings basin ultimately achieves compliance with MN WQS. The FEIS also makes no mention whatsoever of the fact that, under the No Action Alternative, water quality is required to improve in the Embarrass River, Spring Mine Creek, Wyman Creek and Second Creek, as the Minnesota Pollution Control Agency formally designated these waters as impaired for aquatic life use on their 2012 303(d) list. As a result of that designation, the Minnesota Pollution Control Agency is required under the Clean Water Act to conduct Total Maximum Daily Load or TMDL studies to set pollutant-reduction goals necessary to restore those impaired waters. More explicitly, federal and state regulations require *implementation of restoration measures* to meet TMDLs.[258] These identified aquatic life use impairments (for fish Index of Biological Integrity and/or benthic macroinvertebrate Index of Biological Integrity) have resulted largely because of hydrologic alteration and polluted surface and groundwater resulting from historic and existing mining operations.[259]

Compliance with the law – the Cliffs Erie Consent Decree and the Minnesota Pollution Control Authority's water quality standards for the impaired waters – would improve water quality, and should have been affirmatively discussed in the FEIS's description of the No Action Alternative The failure to do so creates the inaccurate impression that the baseline conditions – a brownfield and impaired waters would continue – when, in fact a no action alternative cannot include elements that would not comply with the law. The No Action Alternative must take into account current legal proceedings and assume compliance with the law. *Friends of Yosemite Valley v. Kempthorne*, 520 F.3d 1024, 1038 (9th Cir. 2008); *Conservation Northwest v. Rey*, 674 F. Supp. 2d 1232, 1245-1246 (W.D. Wash. 2009); *see also Preserve Our Island v. United States Army Corps of Engineers*, 70 ERC 16222009 WL 2511953 (W.D. Wash. 2009) (Corps failed to properly evaluate the no action alternative when it incorrectly assumed that an old dock would remain and "would continue to degrade, leaching creosote into the water" – an assumption that was contrary to the lease which required removal of the dock whether or not the proposed action was approved). *See also Center for Biological Diversity v. U.S. Department of the Interior*, 623 F.3d 633, 643-646 (10th Cir. 2010) (BLM's assumption that mining would occur in the same manner whether or not the proposed land exchange occurred was erroneous in light of other law that would still have applied, and resulted in an inaccurate examination of the no action alternative).

In summary, the FEIS approach to considering less environmentally degrading alternatives is fundamentally inadequate. As set out above, CEQ rules require that the EIS "present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public."[260] For Projects

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[258] *See,* http://www.pca.state.mn.us/index.php/water/water-types-and-programs/minnesotas-impaired-waters-and-tmdls/minnesotas-impaired-waters-and-total-maximum-daily-loads-tmdls.html (last visited December 11, 2015).

[259] *St. Louis River Watershed Stressor Identification Report,* Final Draft 5/26/15, Minnesota Pollution Control Agency.

[260] 40 C.F.R. § 1502.14 (stating also that the EIS must "[d]evote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative

that are not water-dependent, the USACE must presume that practicable alternatives that do not involve special aquatic sites exist; further, it must be clearly demonstrated by the applicant for the permit that the basic Project purpose cannot be served without the proposed impact. These two requirements constitute the 'rebuttable presumptions' for CWA alternatives analysis that would support a finding that the proposed Project *is* the LEDPA. This FEIS is deficient without fully-evaluated reasonable alternatives, including the LEDPA, a more rigorous and quantitative analysis of indirect wetland impacts, and incorporation of the ecosystem services values provided by the existing environment at the proposed mine site and land exchange parcel.

4. The FEIS is not adequate under Minnesota law.

Minnesota law requires that after a final EIS has been prepared, "[t]he responsible governmental unit [DNR] shall determine the adequacy of an environmental impact statement." Minn. Stat. § 116D.04, subd. 2a(h); Minn. R. 4410.2800, subp. 1. This requires consideration of whether the final EIS:

> A. addresses the potentially significant issues and alternatives raised in scoping so that all significant issues for which information can be reasonably obtained have been analyzed in conformance with part 4410.2300, items G and H, [which, in turn, requires the EIS to consider alternatives to the proposed Project, Minn. R. 4410.2300, item G, and address the environmental, economic, employment, and sociological impacts of the proposed Project and the alternatives, *Id.* item H];
>
> B. provides responses to the substantive comments received during the draft EIS review concerning issues raised in scoping; and
>
> C. was prepared in compliance with the procedures of the act and parts 4410.0200 to 4410.6500.

The FEIS here is not adequate. It does not satisfy the requirements of Minn. R. 4410.2800, subp. 1.A, as it does not fully or fairly present all "significant issues for which information can be obtained," did not consider other reasonable alternatives, and did not provide accurate and complete information on the environmental, economic, employment and sociological impacts of the proposed Project or the alternatives. As described in detail above, the FEIS fails to base its assessment of the environmental impacts of the proposed Project on sound scientific analysis across a range of significant environmental impacts – including water quality, mercury loading, wetlands, air quality, and wild rice, among others. Instead, the FEIS bases its conclusions on flawed application of its models, incorrect baseline data, and untested assumptions. As set out above, the Band and others have provided scientific analysis which refutes the conclusions reached in the FEIS. The FEIS's failure to give effect to the relevant available data and the relevant substantial scientific analysis leads the FEIS to conclusions that are arbitrary and capricious and unsupported by the evidence in the record

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merits."). *See also* 40 C.F.R. § 1502.16 (requiring the EIS to include analysis of "[t]he environmental effects of alternatives including the proposed action.")

In addition, the FEIS did not satisfy the requirements of Minn. R. 4410.2800, subp. 1. B. While the FEIS includes appendices which report on the comments made, and contains columns intended to provide the agencies' responses to those comments, the responses are in substantial respects nonsubstantive, limited to conclusory statements that the matter was considered. But the flaws in the models and studies preclude a conclusion that the MDNR has complied with its obligation to carefully consider the comments made.

Further, the FEIS does not satisfy the requirements of Minn. R. 4410.2800, subp 1.C. While notice and an opportunity to comment on the draft and final EIS have been provided, the time allocated for review and comment on the FEIS was not adequate for a proposed project that is the first of its kind in Minnesota, has extensive environment impacts, and is the subject of discussion in a 3500 page document, which, in turn cites to thousands of pages of source documents, many of which were prepared after comments were submitted on the DSEIS. In these circumstances, a period of only 37 days – which began shortly before the Thanksgiving holiday – in which to review this volume of material was not adequate.

Because of the fundamental errors in the FEIS, it cannot be relied on to make decisions regarding permits for the proposed mine. The FEIS should be found inadequate.

5. The standards for a section 404 permit are not satisfied by the proposed Project.

The purpose of the Clean Water Act is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a). The Clean Water Act generally prohibits the discharge of dredged or fill materials into waters of the United States unless authorized by a permit. *Id.* § 1311(a). While the Secretary of the Army is authorized to issue permits for the discharge of dredged or fill material into waters of the United States, section 404 of the Clean Water Act and the guidelines implementing it prohibit the issuance of such permits unless a number of critical criteria are satisfied. *Id.* § 1344; 40 C.F.R. Part 230; 33 CFR Part 320. The application here does not satisfy those requirements and must be denied.

A. The Project is not the least environmentally damaging practicable alternative.

The guidelines implementing section 404 prohibit the issuance of any permit "if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences." 40 CFR § 230.10(a). Those guidelines further provide that "an alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." *Id.* § 230.10(a)(2). An alternative is practicable even if in an area "not presently owned by the applicant . . . if it could reasonably be obtained, utilized, expanded or managed." *Id.* § 230.10(a)(2). In addition, where the activity "does not require access or proximity to or siting within the special aquatic site in question to fulfill its basic purpose (i.e., is not "water dependent"), practicable alternatives that do not involve special aquatic sites are presumed to be available, unless clearly demonstrated otherwise." *Id.* § 230.10(a)(3). The CEQ Guidance further makes

clear that "Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than *simply desirable from the standpoint of the applicant.*"[261]

The Clean Water Act "compels that the [least-damaging] alternative be considered and selected unless proven impracticable." *Utahns for Better Transp. v. U.S. Dep't of Transp.,* 305 F.3d 1152, 1189 (10th Cir.2002); *Alliance to Save the Mattaponi v. U.S. Army Corps of Engineers,* 606 F. Supp. 2d 121, 130 (D.D.C. 2009) As the courts have further explained, "unless the applicant clearly demonstrates otherwise, the Corps presumes that all practicable alternatives that do not involve the discharge into a wetland have a less adverse environmental impact. . . . Where the presumption applies, the permit applicant bears the burden of providing "detailed, clear, and convincing information *proving* that an alternative with less adverse impact is impracticable." *Greater Yellowstone Coalition v. Flowers,* 359 F.3d 1257, 1269 (10th Cir.2004) (internal quotations and citation omitted). And while the Corps may rely on information submitted by the applicant, the regulations require that the Corps independently verify such information. *Id.*; 40 C.F.R. § 1506.5(a).

For the reasons set out in detail in Sections 1.J and 3 above, the Project here is not the least environmentally damaging practicable alternative (LEDPA).

The FEIS rejects the alternative extraction of the minerals that might be done by an underground mine. The FEIS recognizes that the underground mining alternative would have far less adverse environmental impacts, including far less adverse impacts on wetlands than the proposed open-pit mine. It is also undisputed that the use of an underground mine is technically feasible.

The sole basis for rejecting the underground mine alternative is a conclusion that it is "economically infeasible." FEIS 3-184. But the economic feasibility conclusion is unsupported by a complete economic comparison of the full extent of the costs of an open pit mine which might then be fairly compared to the costs of an underground alternative. The FEIS expressly states that it does not include a calculation of the financial assurances required to addresses the operating and post-closure costs required to mitigate the adverse environmental impacts of the Project. As a result, there is no basis on which a comparison of the economic feasibility of the underground alternative was, or could be made, to the proposed open pit mine.

The economic analysis was based on a report prepared by PolyMet's consultant. See FEIS, App. B, Foth Infrastructure & Environment, LLC. "Economic Assessment of Conceptual Underground Mining Option for the NorthMet Project" Although EPA, in 2012 advised that the cost figures used to determine economic feasibility needed to be updated, the costs figures were not updated in connection with the FEIS.

As a result, the FEIS does not provide a basis for determining whether the underground mine alternative is in fact "impracticable" or whether it might simply be less profitable than PolyMet's preferred alternative. In the absence of a clear basis for finding economic impracticability, the underground mine remains a less environmentally damages practicable alternative. "'An agency cannot restrict its analysis

[261] CEQ, Forty Most Asked Questions Concerning CEQ's National Environmental policy Act, March, 1981.

to those 'alternative means by which a particular applicant can reach *his* goals.' . . . The Corps has 'the duty under NEPA to exercise a degree of skepticism in dealing with self-serving statements from a prime beneficiary of the project.'" *Simmons v. U.S. Army Corps of Engineers*, 120 F.3d 664, 669 (7th Cir. 1997)(citations omitted). Here, as in *Simmons*, the Corps' "wholesale acceptance of" the applicant's definition of purpose and preferred alternative, precludes any determination that the proposed Project is the least environmentally damaging practicable alternative as required for a 404 permit.

The FEIS also rejected modifications to the proposed Project that, if implemented, would result in other less damaging alternatives if an open pit mine were permitted. Here too, as discussed in detail in section 3 above, a number of mine plan alternatives exist that could mitigate or prevent long-term environmental damage, but none are considered in the FEIS. Examples of alternatives and their resultant environmental benefits include:

- paste or dry tailings disposal to reduce the Project footprint, use less water, and minimize long-term treatment and maintenance (decreasing the risk of surface and groundwater pollution);
- back-filling all waste rock into the east, central and west mine pits (reducing the mine foot print at closure, reducing contaminant runoff to surface and groundwater, reducing volume of water requiring perpetual treatment, restoring additional mine site wetlands); and
- provide reverse osmosis treatment at the mine site immediately rather than waiting until year 40 (augmenting water loss in adjacent high quality wetlands in the Partridge River watershed).

The FEIS improperly fails to consider these alternatives. Its failure to do so is, as set out in detail in Section 3, unsupported by sound scientific or engineer analysis or prudent modern-day mining practices. The existence of other less environmentally damaging practicable alternatives requires denial of PolyMet's application for a section 404 permit

B. The Project will have an unacceptable adverse effect on municipal water supplies, fishery areas and wildlife.

Section 404(c) of the Clean Water Act makes clear that a permit cannot be issued where the Project "will have an unacceptable adverse effect" on municipal water supplies, fishery areas and wildlife. 33 U.S.C. §1344. The guidelines issued under section 404 prohibit issuance of a permit if the proposed discharge of dredged or fill material "will cause or contribute to significant degradation of the waters of the United States." 40 C.F.R. § 230.10(c). Those regulations further explain that effects contributing to significant degradation include "significantly adverse effects" on "the life stages of aquatic life and other wildlife dependent on aquatic ecosystems" and on "aquatic ecosystem diversity, productivity and stability" including "loss of fish and wildlife habitat." *Id.* That is the case here.

As discussed in Section 1.J, above, the FEIS recognizes that "[t]he entire 3014.5-acre Mine Site has been characterized by the MBS as various Sites of High Biodiversity Significance due to the presence of the One Hundred Mile Swamp site, which covers 15 percent of the Mine Site, and the Upper Partridge River site, which is 85 percent of the Mine Site" FEIS 4-201. The FEIS further recognizes that "sites of High Biodiversity Significance contain very good-quality occurrences of the rarest species, high-quality examples of rare native plant communities, and/or important functional landscapes." FEIS 4-201. The FEIS also recognizes that there are two native plant communities in the mine site which the State has designated as "imperiled or vulnerable" – meaning they "have high ecological value, are rare in a given

area, and/or could face danger of extirpation." *Id.* These are black spruce-jack pine woodlands which cover 34 percent of Mine site and rich black spruce swamp which cover 7 percent of Mine site.[262]

There is no question that the Project here will result in the permanent loss of 913.8 acres of wetlands that have high quality and functional values. And as discussed in section 1.J, nearly 2,000 acres of coniferous bog wetlands will be directly impacted by mine pit(s) and stockpiles, or indirectly impacted due to drawdown and/or pollution.

The no-action alternative and denial of the 404 permit are the only means offered in the FEIS to avoid the loss of these irreplaceable resources.

As the President and the CEQ have recently made clear the priority for federal agencies with regard to natural resources is to "avoid any negative environmental impacts first, then minimize impacts, and finally, only seek compensatory offsets for harm that still occurs if necessary." Statement of the CEQ Director on the President's Memorandum of November 3, 2015, *Encouraging Private Investments in America's Natural Resources*.[263] The President's Memorandum[264] plainly directs:

> It shall be the policy of the Departments of Defense, the Interior, and Agriculture; the Environmental Protection Agency; and the National Oceanic and Atmospheric Administration; and all bureaus or agencies within them (agencies); to avoid and then minimize harmful effects to land, water, wildlife, and other ecological resources (natural resources) caused by land- or water-disturbing activities, and to ensure that any remaining harmful effects are effectively addressed, consistent with existing mission and legal authorities. Agencies shall each adopt a clear and consistent approach for avoidance and minimization of, and compensatory mitigation for, the impacts of their activities and the projects they approve. That approach should also recognize that existing legal authorities contain additional protections for some resources that are of such irreplaceable character that minimization and compensation measures, while potentially practicable, may not be adequate or appropriate, and therefore agencies should design policies to promote avoidance of impacts to these resources.

Id. §1 (emphasis supplied). The President's Memorandum further makes clear that priority is to be given to avoiding harmful impacts to natural resources. It directs that:

> "Mitigation" means avoiding, minimizing, rectifying, reducing over time, and

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[262] FEIS 4-201.

[263] https://www.whitehouse.gov/blog/2015/11/03/encouraging-private-investments-americas-natural-resources.

[264] Presidential Memorandum: Mitigating Impacts on Natural Resources from Development and Encouraging Related Private Investment: Memorandum for the Secretary of Defense, the Secretary of the Interior, the Secretary of Agriculture, the Administrator of the Environmental Protection Agency, the Administrator of the National Oceanic And Atmospheric Administration (Nov. 3 2015), *available at* https://www.whitehouse.gov/the-press-office/2015/11/03/mitigating-impacts-natural-resources-development-and-encouraging-related.

> compensating for impacts on natural resources. As a practical matter, all of these actions are captured in the terms avoidance, minimization, and compensation. These three actions are generally applied sequentially, and therefore compensatory measures should normally not be considered until after all appropriate and practicable avoidance and minimization measures have been considered.

Id. § 2(f) (emphasis supplied). The President further directs that the federal agencies' "mitigation policies should establish a net benefit goal or, at a minimum, a no net loss goal for natural resources the agency manages that are important, scarce, or sensitive." and "when a resource's value is determined to be irreplaceable, the preferred means of achieving either of these goals is through avoidance, consistent with applicable legal authorities.." *Id.* § 3(emphasis supplied).

The wetlands that would be directly lost by this Project are important, scarce and sensitive. Portions of them are irreplaceable. It is undisputed that they are Sites of High Biodiversity Significance, on which there are imperiled and vulnerable plant communities which "have high ecological value, are rare in a given area, and/or could face danger of extirpation." In these circumstances, all measures should be taken to avoid their loss. The application for the 404 permit should be denied for this reason alone.

In addition, the FEIS plan for compensatory mitigation falls far short of adequately compensating for the loss of these unique resources. The FEIS would allow the vast majority of mitigation and/or restoration credits to come from outside the Partridge, Embarrass, and St. Louis River watersheds. This is contrary to the regulations governing compensatory mitigation which require that the Corps "use a watershed approach to establish compensatory mitigation . . . to the extent appropriate and practicable. 40 C.F.R. § 230.93(c)(1). As the regulations explain, "[t]he ultimate goal of a watershed approach is to maintain and improve the quality and quantity of aquatic resources within watersheds through strategic selection of compensatory mitigation sites." 40 C.F.R. § 230.93(c)(1). A watershed approach could have been used here as in-watershed opportunities still exist. A watershed approach should have been used here especially in light of the undisputed fact, discussed in more detail in Section 1.J, that the St. Louis River watershed as a whole has experienced cumulative destruction, degradation and hydrologic alterations in well over 50% of the watershed.[265]

The proposed mitigation plan should be rejected for the additional reason that it does not adequately compensate for the very high functional value of the wetlands that would be directly impacted by the Project. *See Final Determination of the U.S. Environmental Protection Agency Pursuant to § 404(c) of the Clean Water Act Concerning the Spruce No. 1 Mine, Logan County, West Virginia,* at 83-4 (2011) (rejecting 404 permit where streams to be created under the mitigation plan would not and could not effectively "replace the high quality resources" of the streams that would be lost by the proposed mine, as the mitigation plan did "not adequately account for the quality and function of the impacted resources."); s*ee also All. to Save the Mattaponi v. U.S. Army Corps of Engineers,* 606 F. Supp. 2d 121, 133 (D.D.C. 2009) (failure to explain how mitigation plan would provide the functional value of the wetlands to be lost was arbitrary and capricious). Compounding these losses, the proposed mitigation plan provide no compensatory mitigation at all for the likely severe adverse indirect impacts that the

[265] See also FEIS Appendix C. Tribal Cooperating Agencies Cumulative Effects Analysis, NorthMet Mining Project and Land Exchange. Sept. 2013.

Project will have on thousands of additional acres of wetlands from mine pit drawdown – a larger area than that described in the FEIS – and which should be addressed by up-front mitigation. The FEIS' plan to "monitor" the indirect impacts on the adjacent wetlands and then, based on undefined criteria consider some possible additional mitigation measures, is insupportable and provides no basis on which a 404 permit could properly be issued.

C. The Project is not in the public interest.

The fact that Project is not the least environmentally damaging practicable alternative, and would have an unacceptable adverse effect on water supplies, fishery areas and wildlife, are each independent, and more than sufficient, grounds for denying the 404 permit. But if more were needed, the permit should be denied for the additional reason that it would not be in the public interest as required by 33 C.F.R. part 320. The public interest review requires "an evaluation of the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest," so that the "benefits which reasonably may be expected to accrue from the proposal" are "balanced against its reasonably foreseeable detriments." *Id.* § 320.4(a). The relevant factors to be considered include but are not limited to: "conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people." *Id.*

The public interest review, in particular requires consideration of the "(i) The relative extent of the public and private need for the proposed structure or work: (ii) Where there are unresolved conflicts as to resource use, the practicability of using reasonable alternative locations and methods to accomplish the objective of the proposed structure or work; and (iii) The extent and permanence of the beneficial and/or detrimental effects which the proposed structure or work is likely to have on the public and private uses to which the area is suited." 33 CFR 320.4(2). The regulations further "discourage as contrary to the public interest" the "unnecessary alteration or destruction of" wetlands as they "constitute a productive and valuable public resource." 33 CFR 320.4(b)(1)

The proposed Project is not based on any public need. Development of this mine is sought by a private company for the purpose of extracting and processing the minerals for profit. The Project does not involve any public work – such as a road, or reservoir, or flood control Project. It is a development sought by and which would directly benefit private interests. The FEIS's description of the Applicant's Purpose and Need for the Project, suggests that there might be some greater public good to be served by the mine stating that "[d]emand continues to rise for these metals due to the expansion of the green economy and rising demand from developing countries like India, China, and Brazil." FEIS, 1-11. But in fact the demand for the these metals is, and has been dropping, and the reduced demand is occurring in developing countries, in particular China, which had previously been a strong consumer of such metals.[266] The decline in the price of copper has led PolyMet's stockholder and investor, Glencore, like other

[266] *See* Exhibits 7a-c, Wall Street Journal, "Copper Swoon Presses Glencore, Other Mines" (Nov 12, 2015); New York Times, "If it Owns a Well or Mine, It's probably in Trouble" (December 8, 2015) See

major international mining companies, to sell some of its mines and to suspend production in others. *Id.* The decline in the demand for copper and copper prices calls into question not only the public need for this Project, but the private need as well.

The only other potential public interest served is the possibility that the Project would provide jobs and generate tax revenues. FEIS 1-11. But the potential benefit of job creation simply does not and cannot offset the very substantial damages that the mine would likely cause to a critically important ecosystem, and in particular its wetlands, fish and wildlife, and water quality, if a 404 permit were issued. This is so for several reasons.

First, the risk of serious environment harm is real. As discussed in detail in Section 1 above, the FEIS's discussion of the impacts of the proposed mine on water quality, mercury, wild rice, and air quality, among others, suffers from a lack of proper scientific analysis. These flaws lead to incorrect conclusions in the FEIS that, for example, the mine will not increase mercury concentrations in fish within the St. Louis River watershed, see FEIS at 5-10, and "would not directly, indirectly, or cumulatively affect the water" in either the Boundary Waters Canoe Area Wilderness or Voyageurs National Park, s*ee* FEIS at ES-36.

Second, the risk of environment harm is compounded by the fact that for many potential adverse environmental impacts, the FEIS substitute of vague plans on "adaptive management" in lieu of science-based analysis of the potential impacts of the Project. See Section 1.K above. In other words, after the mine is approved and in operation, monitoring would be done to determine potential adverse impacts, and if such were to occur, then future mitigation measures would be identified, developed and implemented on an as-needed basis. But this approach does not avoid or prevent mine related environmental impacts. Monitoring can only detect impacts after they have begun to occur and the adaptive management activities would only be a reaction to an impact. At that point, it may well be too late to prevent or mitigate the damage in any cost-effective or meaningful way.

Third, the FEIS recognizes that Project will require ongoing wastewater treatment not only during the mine's 20-year operations, but for several hundred years after the mine closes. At the same time, the FEIS concedes that the calculation of the full costs of these measures has not yet been done, and therefore the financial assurances that would be required to ensure the necessary environmental protections are presently unknown. FEIS 3-140. Thus, even if the discussion of the environmental impacts of the mine in the FEIS were correct, the FEIS's conclusion that the mine will cause no environmental harm is wholly predicted on fully-functioning wastewater treatment facilities for several hundred years. The absence of a calculation of the financial assurances needed to make that a reality deprives the Corps of any basis for determining that the public interests in the environment would be protected if a permit were issued.

Duluth News Tribune, "PolyMet Stockholder, Glencore Selling Copper Mines in Australia, Chile" (Oct 13, 2015).

Fourth, the FEIS contains no assessment of the value of the ecosystem services – an analysis required by the Council on Environmental Quality,[267] the Office of Management and Budget, and the Office Science and Technology Policy[268] As discussed in Section 1.N above, the natural resources in St Louis Watershed are an essential component of the economy in this region. They provide protection from flooding, habitat for plants and animals which, in turn, provide food – fish, game and wild rice – as well as recreational opportunities on which the economy in the region depends. In addition, the wetlands that are part of ecosystems in the St Louis Watershed play a critical role in removing pollutants from water and protecting water quality. [269] Their value has been quantified, and they provide an estimated $5 billion to $14 billion in ecosystem service benefits per year. The asset value of the watershed is between $273 billion and $687 billion over 140 years. *Id.*

Fifth, the regulations governing the public interest analysis clearly "discourage as contrary to the public interest" the "unnecessary alteration or destruction of" wetlands as they "constitute a productive and valuable public resource." 33 CFR 320.4(b)(1). Given the high quality and large area of wetlands that would be directly lost if the Project were developed, this element of the public interest analysis weighs against the issuance of a permit.

Sixth, the Fond du Lac Band, along with the Grand Portage and Bois Forte Bands, hold treaty-protected rights to hunt, fish and gather in the territory, and important cultural and historic resources that would be adversely affected by the proposed mine. In addition, the reservation established for the Fond du Lac Band by that treaty –the Band's permanent home and a small fraction of the its aboriginal territory – lies downstream from the Project. The federal government, by the promises made in the treaty, has a trust responsibility to protect those important treaty rights and the resources on which they depend from the harms that would result if the mine were developed.

All these factors compel a conclusion that the public interest is only served by the No Action Alternative and denial of the permit. If such a determination is not made by the Corps, it should be made by EPA under CWA §404(c).

D. Any Section 404 Permit must also ensure that it meets the downstream water quality standards established by the Fond du Lac Band.

The Corps' November 13 2015 Public Notice regarding PolyMet Mining Inc.'s application for a section

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[267] Council on Environmental Quality, Principles and Requirements for Federal Investments in Water Resources 1 (March 2013), *available at* https://www.whitehouse.gov/sites/default/files/final_principles_and_requirements_march_2013.pdf.; Council on Environmental Quality, Interagency Guidelines 21 (2014), *available at* https://www.whitehouse.gov/sites/default/files/docs/prg_interagency_guidelines_12_2014.pdf.

[268] Memorandum of October 7, 2015 from the Office of Management and Budget, Council on Environmental Quality and Office Science and Technology Policy to all Executive Departments and Agencies, M-16-01, "Incorporating Ecosystem Services into Federal Decision Making," *available at* https://www.whitehouse.gov/sites/default/files/omb/memoranda/2016/m-16-01.pdf.

[269] Ex 8, Earth Economics, *The Value of Nature's Benefits in the St. Louis River Watershed* at viii (June 2015).

404 permit recognizes that "Section 404 permit cannot be issued for any activity unless state water quality certification for the activity is granted or waived pursuant to Section 401 of the Clean Water Act." Notice at 7. But in addition to a Section 401 permit from the Minnesota Pollution Control Agency, because of the potential impacts of the Project on the downstream waters, the Fond du Lac Band's authorities under the Clean Water Act, §§303(c) and 401, must also be addressed, and the water quality standards established by the Band must also be satisfied. *See Wisconsin v. EPA*. 266 F. 3d 741, 748 (7th Cir. 2001)("Once a tribe is given TAS [treatment as state] status, it has the power to require upstream off-reservation dischargers . . . to make sure that they activities do not result in contamination of the downstream on-reservation waters."). *See also City of Albuquerque v. Browner*, 97 F.3d 415, 424 (10th Cir. 1996) (upholding EPA's authority to require upstream NPDES dischargers to comply with downstream tribal standards.") Thus, before a section 404 permit can be issued, not only is a section 401 permit required from the MPCA, but measures must be taken to ensure the Project will comply with the Band's water quality standards.

6. The requirements for a land exchange are not satisfied.

The Band submitted comments[270] on the Feasibility Analysis for the Proposed Land Exchange, including:

> "The Federal Land Planning and Management Act (FLPMA) requires that National Forest System lands may only be exchanged for lands of equal value (43 U.S.C. §1716(a); 36 C.F.R. 254.12(a)). The policy is intended to avoid conferring an inequitable private benefit and the resulting public loss when exchanging federal for non-federal estates. However, the valuation of the federal estate appears to have been made without considering the future use of the property; i.e., the mining Project described in the PolyMet DEIS and the de facto purpose for the land exchange. A full consideration of the fair market value and future use of the federal land in the proposed PolyMet Land Exchange would recognize a private windfall instead of an equal exchange, in violation of federal statutes, rules and policies.
>
> ...The Band is also concerned that most of the non-federal land proposed in the PolyMet Land Exchange has a divided mineral estate. Divided ownership raises uncertainties about future benefits that that the non-federal surface could afford to the public, further diminishing the value of the non-federal lands, and is not consistent with Forest Service Conveyance policy (36 CFR 254.15) which states:
>
> "(ii) The United States shall not accept lands in which there are reserved or outstanding interests that would interfere with the use and management of the land by the United States or would otherwise be inconsistent with the authority under which, or the purpose for which, the lands are to be acquired. Reserved interests of the non-Federal landowner are subject to the appropriate rules and regulations of the Secretary, except upon special finding by the Chief, Forest Service in the case of States, agencies, or political subdivisions thereof (36 CFR part 251, subpart A)."

[270] *See* letter to James W. Sanders (USFS), Jon K. Ahlness (USACE) RE: PolyMet Land Exchange Supplemental Draft EIS Scoping, Nov. 29, 2010.

> Federal rules also state, "The Secretary is not required to exchange any Federal lands. Land exchanges are discretionary, voluntary real estate transactions between the Federal and non-Federal parties" (36 C.F.R. 254.3(a)). Further, any proposed federal land exchange that is not consistent with forest resource management plans must be rejected under 36 C.F.R. 254.3 (f) which states, "The authorized officer shall consider only those exchange proposals that are consistent with land and resource management plans." Finally, an exchange of federal land may only be completed after a determination is made "that the public interest will be well served" (36 C.F.R. 254.3(b)). The public interest determination must include a specific finding that "The intended use of the conveyed Federal land will not substantially conflict with established management objectives on adjacent Federal lands, including Indian Trust lands" (36 C.F.R. 254.3(b)(2)(ii)).
>
> The Fond du Lac Integrated Resource Management Plan (IRMP), approved by the Reservation Business Committee in 2008, identifies both on- and off-reservation resource management priorities, including protecting and improving wild rice harvest, improving in-stream habitat for fishing, preserving traditional hunting, fishing and gathering rights in the 1854 and 1837 Ceded Territories, preserving the quality and quantity of wildlife and wildlife habitat in the Ceded Territories, and vigorous environmental protection such as enforcement of water quality standards affecting the Reservation. The Band expects that the U.S. Forest Service, in considering the PolyMet Land Exchange, would coordinate with the policies expressed in our plans to protect natural resources on the Reservation and in the Ceded Territories.
>
> … The Band is extremely concerned about the loss of high quality, even exceptional, wetlands within the federal estate, without sufficient information to understand whether the proposed non-federal parcels provide equivalent functions and values. Clearly, there will be a net loss of over 1400 acres of wetlands under the proposed land exchange, including much of the Hundred Mile Swamp. The federal lands include 4,166 acres of high quality, undisturbed wetlands within the Lake Superior Watershed that would be permanently lost (the map and chart in the FA show all 2,827 acres of Hay Lake wetlands and most of the 1,259 acres of wetlands in the Wolf Lands parcels are outside the Lake Superior Basin).
>
> Access to treaty-protected resources is of prime importance to Band members. Loss of access to or use of public lands within the Ceded Territory can significantly impact exercise of treaty rights, and this issue should be thoroughly evaluated in the SDEIS process. The Band also looks forward to substantive discussions with the U.S. Forest Service as part of the Section 106 (National Historic Preservation Act) consultation process, in order to raise more specific concerns about cultural and natural resource impacts that would likely occur under the proposed land exchange."

The Land Exchange Proposed Action, as described in the FEIS, serves to confirm our concerns for permanent, unmitigated impacts to treaty resources in the 1854 Ceded Territory.

The Government Accountability Office (GAO) issued a critical report in 2000, assessing how the Bureau of Land Management (BLM) and the US Forest Service (USFS) land exchange program requirements had been implemented between 1989 and 1999, and identified several significant problems. According to the report, "**agencies did not ensure that the land was being appropriately valued, or that exchanges served the public interest**, or met certain other exchange requirements. In view of the many problems in both agencies' land exchange programs and given the fundamental difficulties that underlie land exchanges when compared with cash-based transactions, we believe that the Congress may wish to consider directing the Service and the Bureau to discontinue their land exchange programs."[271] Nine years later in a separate review, the GAO found substantial problems implementing land exchanges. One third of the 31 land exchanges examined had documented issues in the agency's public interest determination.[272]

The FEIS in section 1.4.3, describes the Land Exchange Requirements:

> *Regulations provide that the Forest Supervisor "may complete an exchange only after a determination is made that the public interest will be well served" (36 CFR 254.3(b)). Factors that must be considered include: the opportunity to achieve better management of federal lands and resources, to meet the needs of state and local residents and their economies, and to secure important objectives, including but not limited to: protection of fish and wildlife habitats, cultural resources, watersheds, and wilderness and aesthetic values; enhancement of recreation opportunities and public access; consolidation of lands and/or interests in lands, such as mineral and timber interests, for more logical and efficient management and development; consolidation of split estates; expansion of communities; accommodation of existing or planned land use authorizations; promotion of multiple-use values; implementations of applicable Forest Land and Resource Management Plans; and fulfillment of public needs. See 36 CFR 254.3(b) and 254.4(c)(4).*

In general, the language found in Chapter 4 of the FEIS regarding accessibility suggests that Tracts 2, 3, 4 and 5 plus a portion of Tract 1 have similar accessibility as the federal lands proposed for exchange (i.e., no improvement in public access). High quality/high biodiversity lands will be exchanged for lands with moderate quality and biodiversity. Proposed lands to be brought into the federal estate will not have Weeks Act protection, and do not include mineral rights. These factors do not support a public interest determination, nor do they comport with the federal trust responsibility. The FEIS fails to evaluate the entirety of impacts as a result of the Land Exchange; i.e., that over 6,000 acres of high quality forests and wetlands will be permanently destroyed or degraded, that downstream ecosystems will be degraded, that treaty resources will be permanently lost.

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[271] G.A.O., BLM and the Forest Service: Land Exchange Need to Reflect Appropriate Value and Serve the Public Interest, June 2000. http://www.gao.gov/archive/2000/rc00073.pdf (Last visited December 7, 2015).

[272] G.A.O., BLM and the Forest Service Have Improved Oversight of the Land Exchange Process, but Additional Actions are Needed, June 2009 http://www.gao.gov/assets/300/290765.pdf (last visited December 7, 2015).

Table 7.3.5-1 in the FEIS presents the Public Interest Factors That Must be Considered for the Land Exchange Proposed Action. The Band will be providing more detailed comments to the US Forest Service in response to their draft Record of Decision, but notes our significant disagreements with their conclusions, in the FEIS, on securing important objectives, "greater preservation protection" of cultural resources, consistency with relevant executive orders, consolidation of interests in lands and split estates, socioeconomic effects, whether the proposed action is "environmentally sound", potential effects to water resources, and "positive effects on environmental justice populations". Overall, the USFS cannot "ensure that these mineral resources can be produced in an environmentally sound manner contributing to economic growth," because the water modeling and impact assessment process is not scientifically defensible.

The Land Exchange Proposed Action also does not meet the federal government's trust responsibility to protect the Band's treaty rights and the resources on which those rights depend in the 1854 Ceded Territory. It results in a permanent loss of 382 acres, does not protect fish and wildlife habitat within the Mine Site, does not protect important cultural resources such as wild rice beds, historic trails, and a substantial portion of the Mesabi Widjiu, does not protect the Embarrass, Partridge or St. Louis River watersheds, does not consolidate mineral interests in the private parcels that would be conveyed to the federal estate, does not promote multiple-use values, or fulfill public needs.

In the 1854 Ceded Territory, Fond du Lac, Bois Forte and Grand Portage band members can exercise treaty rights on private land, but only with landowner permission unless the land is generally open to public use; therefore, maintaining public land ownership is critical for the exercise of treaty rights. The Forest Service should consider exchange for private lands *only* in order to maintain - or better yet, increase - the total public land acreage within the 1854 Ceded Territory, if it is adequately considering trust responsibility and tribal interests in its determination.

The FEIS in section 3.1.2, sets out the Land Exchange Overview, as follows:

> *"The federal lands are located adjacent to historic mining projects on the Mesabi Iron Range and are mostly surrounded by privately held land used for mining and other industrial purposes; portions of the east and southwest areas of the federal lands are bordered by Superior National Forest lands."*

This language and description is purposefully deceptive; it highlights the Mine Site's proximity to industrial activities but is completely silent on the predominant existing conditions that the Minnesota County Biological Survey identified as having "High Biodiversity Significance". It downplays the largely undisturbed nature and the ecological and biodiversity significance of most of the contiguous lands (i.e., the Hundred Mile Swamp, St. Louis River Headwaters Site). Biodiversity is described in the Forest Plan as the "variety of life and its ecological processes… [as well as] ecosystems, which comprise both the communities of organisms within particular habitats, and the physical conditions under which they live" (USFS 2004b). Biodiversity is important to consider for managing natural communities in a sustainable and ecological manner."[273]

[273] FEIS 5-711.

Inexplicably, the FEIS *removes* from Chapter 4, Affected Environment, this salient description of existing land use in the federal tract that appeared in the SDEIS: *The federal lands proposed for exchange contain portions of the Minnesota County Biological Survey (MCBS) Headswater Site.*[274] "The Headwaters Site straddles the continental divide, with water from the Site flowing both east through the Great Lakes to the Atlantic Ocean and north to the Arctic Ocean. Paradoxically, the divide runs through a peatland. Although the peatland appears flat, water flows out of it from all sides, forming the ultimate source of rivers that eventually reach two different oceans. The Site is the headwaters of four rivers: Stony River, Dunka River, South Branch Partridge River, and the St. Louis River, which is the second largest tributary to Lake Superior....**[t]hese conservation areas are the best opportunities for conserving the full diversity of terrestrial and aquatic ecosystems and globally rare or declining species**."[275] It is hard to understand why, in the face of explicit SDEIS narrative noting the biodiversity significance of the Mine Site in its current condition and land use, the Co-lead Agencies would expunge this information from the FEIS. It does not serve the public, nor comport with federal trust responsibility, to deliberately diminish the ecological values provided by such a large expanse of intact, functional, diverse forest and wetland habitat.

In FEIS 3.2.2.1.2, Existing Conditions: the statement regarding recent harvest of timber in mine site area in 2008 directly contradicts statements in Chapter 4 (4-629) "...no ongoing forestry activity on the federal lands and not evidence of recent past forestry activity" and Chapter 5 (5-678) regarding "...no current economic activity (e.g., forestry, etc.) on the federal lands. The Band questions, more importantly, the statement "...federal lands are not accessible to the public for economically measurable use, such as forestry or recreation...Thus while the federal lands may hold some theoretical economic value for timber harvest, their practical economic value is zero." But as discussed in detail in Section 1.N, ecosystem services valuation is a necessary but missing component to this review process.

Indeed, the public interest determination cannot be made without considering the ecosystem services provided by the lands in both the federal and non-federal estates. As discussed above, although required by the Council on Environmental Quality,[276] as well as the Office of Management and Budget, and the Office of Science and Technology Policy,[277] the FEIS provisions on the proposed land exchange wholly fail to consider, much less address, the value of ecosystem services. Consideration of ecosystem service values has been required for plans and proposals that affect management of federal assets including National Forests, and are to be implemented to address a broader range of federal decision-

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[274] SDEIS, pp. ES-31, 4-429.

[275] Minnesota Biological Survey Division of Ecological Services Department of Natural Resources, *An Evaluation of the Ecological Significance of the Headwaters Site*, March 2007.

[276] Council on Environmental Quality, Principles and Requirements for Federal Investments in Water Resources 1 (March 2013), *available at* https://www.whitehouse.gov/sites/default/files/final_principles_and_requirements_march_2013.pdf.; Council on Environmental Quality, Interagency Guidelines 21 (2014), *available at* https://www.whitehouse.gov/sites/default/files/docs/prg_interagency_guidelines_12_2014.pdf.

[277] Office of Management and Budget, Council on Environmental Quality and Office Science and Technology Policy , Memorandum to all Executive Departments and Agencies, M-16-01, *Incorporating Ecosystem Services into Federal Decision Making*. (October 2015), *available at* https://www.whitehouse.gov/sites/default/files/omb/memoranda/2016/m-16-01.pdf.

making in the future. *Id.* at 1-5. The record includes an economic analysis of the ecosystem service value of the St Louis Watershed. Fond du Lac submitted an expert economist report, *The Value of Nature's Benefits in the St. Louis River Watershed*[278] to the Co-lead Agencies with the expectation of its consideration in the environmental review (and its inclusion in Appendix C of the FEIS), and GLIFWC provided additional preliminary analysis of the value of the wetlands/floodplains/forests for properties conveyed. Despite the available expert analysis of ecosystem service values, the Co-lead agencies did not consider it at all in their environmental review process, and chose not to include this additional analysis in Appendix C where it would be readily available to the public.

As to FEIS section 3.3.1.1, the Band disputes that the Land Exchange meets Criteria A for a land exchange, without benefit of an ecosystem service value comparative analysis. Further, the Band and the other tribal cooperating agencies have consistently maintained that protection of cultural resources and the healthy habitats and watersheds necessary to sustain them are not met by the proposed Land Exchange. Certain rare cultural resource types (trails, ceremonial sites) will be both directly and indirectly adversely affected.

3.3.2.2 All federal lands except Tract 4 have severed mineral and surface rights; this is inconsistent with Forest Plan guidelines for acquisition and Desired Condition ("...eliminate conflicts..."). The lands to be acquired have less protection (Weeks Act) than the lands currently in the federal estate. This is not in the public interest.

Of the approximately 6,025 acres of MCBS Sites of High Biodiversity Significance under the Land Exchange Proposed Action, nearly 2,000 acres of coniferous bog wetlands will be lost to the federal estate and therefore effectively to the Bands, if the Land Exchange Proposed Action is implemented. This is significant because many tribally harvested resources are only available in coniferous bogs (e.g. cranberries, soft-leaved blueberries, sweet flag), and mitigation for coniferous bogs is simply not feasible. The ecological term 'biodiversity' equates to 'abundance' and 'subsistence' for the Bands. The exchange of thousands of acres of high quality wetlands and forests containing some of the few remaining wildlife corridors in northeastern Minnesota available to the Bands to exercise reserved 1854 treaty rights, for lands that have moderate diversity is inconsistent with fiduciary responsibilities that are shared by all federal agencies.

The FEIS deflects attention from the significance of the loss of these high-quality lands through the Land Exchange Proposed Action by elevating the accessibility issue:

> *"[t]he 6,495.4 acres of federal lands are not accessible for public use via land, while substantial portions of the non-federal lands do have public access via public roads or hiking trails. This distinction is a factor in evaluating land use effects, because public access defines the degree to which the lands in question can actually be used..."*[279]

But greater public access to other federal lands does not in any meaningful way offset the permanent loss of critically important pristine wetlands.

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[278] As noted, this report was provided to the Co-lead agencies during the environmental review.
[279] FEIS 5-673.

Section 106 consultation with the Bands has ultimately resulted in acknowledged direct adverse effects to some of the cultural resources within the Proposed Project area.[280] Historic trails of historic significance to the tribal cooperating agencies connect what is now Beaver Bay with Lake Vermillion. These trails "are associated with the lives of persons significant in our past"[281] including John Beargrease[282], Peter Gagnon[283], and Alec Posey[284]. In more recent history, Bois Forte Band members used a sugarbush near the plant site and harvested wild rice in the Embarrass River near the LTVSMC tailings basin.[285]

The FEIS does not provide adequate discussion of the adverse effects of the proposed land exchange on wetlands and headwater streams within the St. Louis River watershed/Lake Superior Basin, where the loss of first-order headwaters streams, second-order streams and wetlands have the potential to significantly adversely impact downstream water quality, fisheries, and wildlife that are important to the Bands. The Land Exchange Proposed Action would relinquish water resources within the Lake Superior basin for wetlands and surface water resources outside the Lake Superior basin and the St. Louis River watershed, although still within the 1854 Ceded Territory. Federal lands include 4,164 acres of wetlands within the Lake Superior basin; non-federal lands contain 4,669 acres of wetlands, of which only 373 acres are within the Lake Superior Basin, demonstrating there would be a permanent loss of 3,791 acres of federally managed wetlands within the Lake Superior Basin.[286] It is well known that wetlands play an important role in protecting the quality and condition of downstream waters by retaining floodwaters, sediment, nutrients, and other pollutants. Wetlands also function as thermal refuge for moose when summertime temperatures exceed 14°C, the point at which moose become thermally stressed,[287] and wetlands provide an important forage resource for moose during the open water season.

The Superior National Forest Plan clearly states "Lands within the Forest serve to help sustain American Indians' way of life, cultural integrity, social cohesion, and economic well-being. Superior National Forest facilitates the exercise of the right to hunt, fish and gather as retained by Ojibwe whose homelands were subject to treaty in 1854 and 1866 (10 Stat. 1109 and 14 Stat. 765). Ongoing opportunities for such use and constraints necessary for resource protection are determined in consultation with the following Ojibwe Bands: Fond du Lac, Grand Portage, and Bois Forte. Forest management activities will be conducted in a manner to minimize impacts to the ability of Tribal members to hunt, fish, and gather plants and animals on Forest Service administered lands."[288] However, the FEIS concedes that the land exchange will cause irretrievable losses of resources for the Bands: "The federal lands may contain natural resources culturally important to tribal entities, including access to the land itself, which would be irreversibly lost following the Land Exchange Proposed Action

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[280] FEIS 5-563 through 5-565.
[281] 30 CFR Part 60.4(b).
[282] Lancaster, D., John Beargrease: Legend of Minnesota's North Shore.
[283] Bardon, John A., Superior Wisconsin Papers, *available at* http://digital.library.wisc.edu/1711.dl/WI.Hayes1j.
[284] Vennum, Thomas Jr., Wild Rice and the Ojibway People, 1988.
[285] Rose Berens, Bois Forte Tribal Historic Preservation Officer, 2010.
[286] FEIS Table 5.3.3-4, p. 5-694.
[287] Karns, P. D., Ecology and Management of the North American Moose, 1997.
[288] USFS, Superior National Forest Plan, pp. 2-37 and 2-38.

and conversion of the land from public to private ownership."[289] Additionally, the FEIS concludes that the land exchange proposal could have direct and indirect effects on tribal cultural resources by creating noise, impeding access to area that are traditionally or culturally important to the bands and affecting species of importance to the Bands… and that no known cultural resources exist on the non-federal lands.[290]

The FEIS states, "The Land Exchange Proposed Action would result in additional wild rice beds by the acquisition of Tract 1. Tract 1 contains Little Rice Lake, which supports a continuous population of wild rice. Wild rice also grows along the Pike River south of Little Rice Lake and in isolated populations on Hay Lake." However, the wild rice waters in Tract 1 are already accessible to the Bands via the Pike River; adding Tract 1 to the federal estate does not provide additional wild rice harvesting opportunities to Band members in the 1854 Ceded Territories even though it would add an additional 126 acres of wild rice beds to the federal estate.

The desire to resolve "conflict" between the USFS and the Project proponent, whose goal to develop an open pit mine is barred due to deed restrictions on the federal estate, should not prevail over the federal fiduciary responsibility to the Bands. The potential for more roads and hiking trails may provide more access to the public, but does nothing to promote habitat diversity and long-term ecosystem sustainability that are requirements for the preservation of tribal usufructuary rights. Although the Land Exchange Proposed Action may increase acreage in the federal estate, the countervailing permanent loss of critical wildlife corridors, high quality and diverse land and water resources that would result is simply not in the public interest.

In summary, federal land exchanges are **discretionary**, and federal agencies cannot approve permits that will have impacts to treaty resources without additional evaluation and mitigation.[291] No mitigation has been identified in the FEIS for this permanent loss of lands and resources (natural and cultural) to the 1854 Ceded Territory. The public interest determination must include a specific finding that "The intended use of the conveyed Federal land will not substantially conflict with established management objectives on adjacent Federal lands, including Indian Trust lands" (36 C.F.R. 254.3(b)(2)(ii)). This threshold has not been met, and **the Fond du Lac Band objects to the implementation of the Land Exchange Proposed Action**. Additional comments on and objections to this proposed action will be provided to the US Forest Service in response to the draft Record of Decision published on November 17, 2015.

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[289] FEIS, 7-11.

[290] FEIS 5-773.

[291] *See, e.g.*, Exec. Order 13175—Consultation and Coordination With Indian Tribal Governments (Nov. 6, 2000), *available at* http://ceq.hss.doe.gov/nepa/regs/eos/eo13175.html (last visited Feb. 1, 2010).

Conclusion

For all of the foregoing reasons, the Fond du Lac Band of Lake Superior Chippewa submits that the FEIS is not adequate and does not comply with NEPA in material respects. The information regarding the potential environmental impacts of the proposed Project require denial of the section 404 permit and denial of the proposed land exchange.

Respectfully submitted,

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Enclosures
cc (with enclosures) to Cooperating Agencies:

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